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# Swedish Forests in the Bioeconomy: Stories from the National Forest Program

Klara Fischer, Tove Stenius, and Sara Holmgren

Department of Urban and Rural Development, Swedish University of Agricultural Sciences, Uppsala, Sweden

## ABSTRACT

The concept of a bioeconomy has been placed central in formation of a Swedish National Forest Program (NFP). Drawing on Hajer's conceptual framework of storylines, we present a discourse analysis of the working group reports underlying the establishment of the NFP strategy. We ask what stories about Swedish forests come to dominate the NFP process, how well they reflect the commitment of balancing economic, social and environmental interests, and what role the concept of a bioeconomy, has on the formation of these stories. Storylines of Swedish forests in the bioeconomy unite wider European discourses on the bioeconomy and climate change with historical Swedish forest policy discourses, revitalizing a discourse coalition comprising the state and the industry. Particular to the Swedish discourse is the strong emphasis on creating consensus around a single story of the forest-based bioeconomy.

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Bioeconomy; climate change; forest; Hajer; storyline

## Introduction

The notion of a bioeconomy has become central in European policy in the past decade as the regime that will replace the fossil fuel-dependent economy and an important pathway for mitigating climate change (Pülzl, Kleinschmit, and Arts 2014). In Sweden, forestry plays a central role in the country's economy and the forest sector has emerged as a key arena for the development of a bioeconomy (Hodge, Brukas, and Giurca 2017; Lindahl et al. 2017).

In this paper, we investigate the discursive formation of the Swedish bioeconomy in the particular context of the national forest program (NFP). NFPs are one of the central instruments agreed upon internationally to achieve sustainable forest management and have become the primary approach in its implementation, as agreed by the Intergovernmental Panel on Forests in the mid-1990s (Food and Agriculture Organization of the United Nations (FAO) 2018). The NFP process was initiated by the Swedish government in 2013 as an extensive stakeholder dialogue on the future of Swedish forests (Johansson 2016). The process largely coincided with the spread of the

**CONTACT** Klara Fischer  [klara.fischer@slu.se](mailto:klara.fischer@slu.se)  Department of Urban and Rural Development, Swedish University of Agricultural Sciences, P.O. Box 7012, SE-750 07 Uppsala, Sweden.

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concept of a bioeconomy in Europe as a way of talking about the increased role of renewable natural resources in the economy. As a result, the notion of a bioeconomy became an important leitmotif for structuring negotiations around the NFP.

While processes of policy formation are shaped by existing social relations and institutional practices, an important part of how issues become fixed in policy can be studied discursively. This is done by analyzing the language used, including how key issues are problematized, and how certain knowledges, actions and actors are embraced or excluded. As such, this kind of analysis helps us understand how power manifests itself through discourse (Hajer 1995, 2009).

NFPs, as agreed upon by the Intergovernmental Panel on Forests, are based on the principles of pluralistic, voluntary and diverse decision-making procedures in environmental governance (Pülzl and Rametsteiner 2002). The Swedish government has emphasized that the negotiation of the forest-based bioeconomy under the NFP should stay true to the Swedish commitment of balancing economic, social and environmental interests in the forest (Johansson 2016). At the same time, research on the emergence and establishment of meaning of the bioeconomy in Europe indicates less inclusive framings of the bioeconomy as a way of stimulating economic growth and national competitiveness through technological advances (Ramcilovic-Suominen and Pülzl 2018). By analyzing key documents underlying the operationalization of the Swedish NFP vision into a strategy, this paper aims to answer the following questions:

1. What stories about Swedish forests dominate the NFP process?
2. How well do these stories reflect the commitment to balance economic, social and environmental interests in Swedish forests?

The results are discussed in the light of emerging social science research on the bioeconomy, and the role of forests within it, in order to draw conclusions about how the concept of the bioeconomy influences the balance between different interests in Swedish forests.

## Background

### *Emerging Narratives of the Bioeconomy*

With the common focus of decoupling the economy from dependency on fossil fuels, two dominant narratives of the bioeconomy have repeatedly been identified in the literature (Bugge, Hansen, and Klitkou 2016; Hausknost et al. 2017; Staffas, Gustavsson, and McCormick 2013). Hausknost et al. (2017, 4) refer to these as a “*biotechnology-centred*” narrative, emphasizing the promise of new molecular biotechnologies in the bioeconomy, and a “*bioresource-centred*” narrative emphasizing the need to develop industries and value chains based on the use of renewable natural resources. The biotechnology-centered narrative is produced by the biotech industry, the US and the OECD (e.g., OECD 2009), for example, whereas the bioresource-centered narrative is central to the EU (e.g., European Commission 2012). Both narratives place importance on new technologies and the (natural science and engineering) knowledge needed to develop them, the importance of stimulating competitiveness in sectors and industries

working with renewable resources, and the role of the private sector (Bugge, Hansen, and Klitkou 2016; Vivien et al. 2019).

Several studies analyze how the bioeconomy concept relates to notions of sustainability (Dubois and Gomez San Juan 2016; Kröger and Raitio 2017; Pfau et al. 2014; Ramcilovic-Suominen and Pülzl 2018; Vivien et al. 2019). There is broad agreement between these studies that both the biotechnology-centered narrative and the bioresource-centered narrative are based on views of sustainability alternatively referred to as weak (Vivien et al. 2019) or eco-modernist<sup>1</sup> (Birch 2006; Kröger and Raitio 2017), i.e., on ideas that sustainability can be achieved within the current economic system. Some authors (e.g., Bugge, Hansen, and Klitkou 2016; Hausknost et al. 2017; Levidow, Birch, and Papaioannou 2012; Vivien et al. 2019) add a third narrative to the two mentioned above that could be called a “degrowth narrative.” and which currently does not have any significant impact on bioeconomy research and policy in the EU (Schmidt, Padel, and Levidow 2012; Vivien et al. 2019). As its name indicates, the degrowth narrative emphasizes that continued economic growth is not compatible with the bioeconomy. Rather, it underlines the need for a redistribution of resources. It has been pointed out (Sanz-Hernández, Esteban, and Garrido 2019; Vivien et al. 2019) that this narrative is closer to how the concept of bioeconomics was initially framed by the ecological economist Georgescu-Roegen in 1977 (Georgescu-Roegen 1977).

Turning to forest-related bioeconomy discourses emerging in Europe, it can be noted that these, like the overall bioeconomy discourses, are strongly influenced by a bioresource-centered narrative. The key role of trees as carbon sinks in the bioresource-centered narrative also leads to a particular emphasis on the role of production forests in mitigating climate change. The revival of a productionist focus on forests with the bioeconomy has also deflected attention away from other environmental aspects such as biodiversity (Pülzl, Kleinschmit, and Arts 2014). Two recent studies on Finnish forest policy (Kröger and Raitio 2017; Mustalahti 2018) show how, despite stated equality between production and the environment in Finnish legislation since 1993, productivity concerns continue to dominate over environmental concerns, and are stimulated by the concept of a bioeconomy. In interviews with 18 key informants from the Swedish forestry industry, Swedish forest owners’ associations and Swedish environmental non-government organizations (NGOs), Hodge, Brukas, and Giurca (2017) found that all the actors associated the bioeconomy with climate change and gave Swedish forestry a key role in it. While forest owners saw the bioeconomy as an opportunity for getting the rest of society to understand that their forest management was already sustainable, the environmental NGOs emphasized that the production pressure on Swedish forests cannot be increased. The industry placed more emphasis than the other groups on the role of new technology in increasing forest production sustainably. Similarly, Lovrić, Lovrić and Mavsar (2020), reviewing the research activity in the EU related to the forest-based bioeconomy, found that research funded by the EU has been dominated by innovation related to secondary processing (mainly bioenergy and biorefinery), and has mainly been allocated to actors and regions that are already dominant in the sector. The least amount of funding was allocated to research on non-wood forest products.

## Swedish Forest Governance and the NFP

To understand the role given to forests in the formation of the Swedish bioeconomy, we need to consider the wider context in which forests are embedded. Seventy percent of the land area in Sweden is covered by forests (FAO, 2013, reported in Felton et al. 2016), and 57% of Sweden's total land area consists of productive forests (Christiansen and Swedish Forest Agency 2014). Along with hydropower and mining, the development of the export-oriented forestry industry is often referred to as the backbone of the Swedish economy and the welfare state (Holmgren 2015). Historically this has implied a tight political-economic relationship between forestry industries, forest owners, forestry-related academia and the state through the Swedish Forest Agency. State subsidies, research funding and political decision-making have supported forestry production and ensured the delivery of raw materials to industries, generating employment, tax incomes and export revenues (Sundström 2010). In the 1990s the concept of sustainability and the associated global pressure for environmental and social consideration (Wiersum 1995) started to influence Swedish forest policy. The revised Swedish Forestry Act from 1993 aligns environmental and production aspects equally (Swedish Forest Agency 2019). Simultaneously, the 1990s saw an economic recession and a neoliberal shift in Swedish politics, resulting in the Swedish Forest Agency's reduced supervision capacities. Forest owners and forest-based industries were thus given increased freedom regarding forest management provided they fulfilled the minimum requirements stipulated by the Forestry Act. This lack of restrictions eventually came to be known as "*freedom with responsibility*" (Appelstrand 2007, 15–16). Over time, the deregulated Swedish forest policy that formally puts environmental and production interests on an equal footing has come to be labeled "*the Swedish Forestry Model*" (KSLA 2009, 2). In summary, Swedish forestry governance has moved away from a close political-economic relationship between the state and the forestry sector, in which anything other than economic values was excluded, toward weakening state support for forestry, official acknowledgement of the environmental, social and cultural value of forests, and greater inclusion of actors who support these values (Sundström 2010).

Research indicates, however, that opening up the debate about forest governance to include a wider array of actors has led to more tensions within the sector, particularly between industrial forestry, conservation, recreation and reindeer herding (Widmark 2009; Zachrisson and Beland Lindahl 2013). With regard to conservation, only 3.6% of the productive forest area is under formal protection. Voluntary agreements add a further 4.8% of productive forest lands (Felton et al. 2016), thus totaling just over 8% of all productive forest. Felton et al. (2016) point out that this leaves over 90% of productive forest lands outside these types of protective frameworks, which means that balancing conservation and productive values in the forest largely has to occur in production forests.

Reindeer herding, which is the exclusive right of Sweden's indigenous Sámi people, together with forestry are the dominant forms of land use in northern Sweden. The conflict over land use between reindeer herding and forestry results from the two partly occupying the same land, with reindeer possibly damaging trees while grazing in the forest, while clear cutting, ground clearing, fertilizing and dense plantations with short rotation times have negative effects on lichens for pasture (Kivinen et al. 2010;

Sandström et al. 2016). Recent changes in both forestry and reindeer herding practices have intensified these conflicts, but reindeer herders are less satisfied than industry representatives with the facilitated ongoing negotiations around land use, and remain less influential than the forestry industry in the actual outcomes of negotiations (Sandström et al. 2012; Widmark 2009).

The initiation of a Swedish NFP process in 2013 was a response to increasing tensions between different uses of Swedish forests (Johansson 2016). While earlier texts on a Swedish NFP were not influenced by the concept of a bioeconomy (e.g., Skogsstyrelsen 2013), when the Swedish government launched its vision for a Swedish NFP in 2015 (Swedish Government Bill 2015/16:1, 39), the bioeconomy had become a leitmotif for the process, as seen in the government's vision for the NFP: *“Forest, the green gold, shall contribute jobs and sustainable growth in the whole country and to the development of a thriving bioeconomy”* (Swedish Government Bill 2015/16:1, 39). In February 2015, the Minister of Rural Affairs convened a program board, appointed by the government, and consisting of representatives from the government, forest owner associations, forestry companies, research funders, government agencies and civil society (for a detailed list of the participants, see Johansson 2016). In May that year, the government invited stakeholders to participate in the working group process. The final composition of the working groups was determined by the Minister of Rural Affairs and the program board, who also led the work, with support from the Swedish Forest Agency and an external consultancy “Kairos Future” working with trend analysis and scenario planning. Each working group was also steered by a memorandum and a list of guiding questions composed by the Ministry of Enterprise and Innovation. The working groups started working in parallel in the second half of 2015, delivering their final reports with strategic recommendations to the government by 1 September 2016. These reports form the basis of the NFP strategy launched by the government on 17 May 2018.

## Theoretical Framework

To guide our analysis, we used the concepts of stories and storylines (Hajer 1995, 2009). Hajer's starting assumption is that *“people tell facts in a story”* (Hajer 2009, 61). The stories are not fiction and not fact—they are both. The story serves to give closure to an issue by pinning it down in a particular way and making it possible to act on. As a result, complex relationships are simplified and aspects of scientific uncertainty are turned into facts.

Hajer (1995, 62) describes a storyline as a punchline summarizing more complex events and relationships. The analytical level above storylines for Hajer is made up of discourse coalitions. While storylines are defined as *“the cement that keeps a discourse coalition together”* (Hajer 1995, 65), a discourse coalition is more than a group of storylines; it also includes the actors who utter them and the related practices. This means that an analysis of discourse coalitions needs to go beyond textual analysis, which is not undertaken in the present paper.

Although Hajer uses the concepts of discourse and story without clearly defining them or connecting them with his analytical framework, we note that his description of

the internal logic of storylines is similar to how others describe the internal logic of narratives, stories and discourses (Adger et al. 2001; Bacchi 2009; Roe 1994). In the present paper, we use the term “story” for a wider narrative or discourse, and “storyline,” in line with Hajer (1995), as a punchline summarizing an important part of the wider story. While the storyline is just a condensed summary of a story, like a wider story it is created by making historical references and analogies (Hajer 1995, 62–65), positioning actors as problem solvers, victims, troublemakers or experts (see also Adger et al. 2001 and Roe 1994 for example) and embracing certain knowledge as value-free, generalizable and/or scientific, whereas knowledge challenging the story is portrayed as specific, value-laden or non-generalizable (Bacchi 2009).

In contrast to full stories, storylines have a special role in binding discourses or stories from different policy domains together. For example, if we look back to the Swedish history of forest policy, we can see the phrase “environmental, social and economic values are equally important” as a storyline that was taken from the international arena and introduced into discourses on Swedish forestry policy during the 1990s. Through this storyline, new wider discourses about sustainability appeared and influenced dominant discourses on Swedish forestry, managing (to some extent) to introduce environmental and social considerations into Swedish forest policy (cf. Sundström 2010). By analyzing storylines in the context of the Swedish NFP, this paper illustrates how discourses related to Swedish forestry and the bioeconomy are brought together, creating and reinforcing some stories about Swedish forests while leaving others untold.

## Material and Methods

The analysis was performed by the first and second authors jointly and builds on the four reports produced by working groups (in total 354 pages of text, see Annex 1 for a full list of participants in the four working groups) (Ackzell et al. 2016; Andersson et al. 2016; Andrén et al. 2016; Berglund et al. 2016). The working group reports form the core of the documented work between the formation of the NFP vision and the final strategy (as described further in the section “Swedish forest governance and the NFP” above). Thus these documents are central to the more extensive reasoning behind the role given to Swedish forests in the bioeconomy, and the prioritization of different actors and interests in this. The memoranda guiding the working groups, found at the end of each working group report, were also included in the analysis.

The discourse analysis, following Hajer (1995), was motivated by the research questions and centered on identifying storylines in the form of condensed statements about how issues, actors and knowledges intertwine, and how these storylines are bound together in a wider story about Swedish forests in the bioeconomy. The first and second authors read all the documents, first separately and then jointly, and coded them thematically (Robson and McCartan 2011). We looked both for key themes discussed in the reports and key actors mentioned. Dominant themes included neo-industrialisation and consensus, and dominant actors were the forestry industry and the general public for example. Subsequently we read through all the thematic codes to look for how “facts” were constructed in the text, how issues were linked together and filled with meaning in positive or negative ways, how actors were linked with issues as problem

solvers, experts, victims or trouble makers for example, the use of historical references and analogies, and the use of the term bioeconomy in support or discouragement of particular issues. Throughout the coding process, the first and second authors compared the codings and discussed discrepancies, re-read the documents and modified the coding until both were satisfied that the final codes were valid and reliable. In a few instances where agreement on the final coding could not be reached, we concluded that the theme was not clear or dominant enough in the text to be justified as a valid finding. Such themes were abandoned and not included as findings. A way of reasoning was identified as a storyline linking particular issues and actors together, and condensed fact-like statements were repeated in similar ways in several places in the documents and reinforced one other. By linking our findings to the background literature on forest policy and the bioeconomy, we traced the emerging storylines to wider stories about the bioeconomy and forests, and also noted actors and issues mentioned in wider discourses that were unmentioned or only touched upon to a limited extent in the Swedish storylines and wider stories emerging from our analysis. In the results section, we use quotes from the analyzed documents to exemplify the kinds of statements that were interpreted in a certain way. Such quotes are used as examples of broader trends identified in the material. All the quotations were translated from Swedish to English with the help of a native English editor who is familiar with Swedish.

## Results

In the sections below, we present our analysis of the four working group documents. Each heading in the section represents an identified storyline and in the text we describe how this storyline is built up, its internal logic, and how the concept of a bioeconomy shapes and is shaped by the storyline. Subsequently, we discuss how these storylines join together into a wider story about Swedish forests in the bioeconomy.

### ***A Bioeconomy Will Revive Swedish Forestry in a Sustainable Way through Neo-Industrialisation***

Reading through the four working group documents, it initially seemed as though the bioeconomy is meant to increase all types of forest use while also preserving forests. Taken together, the reports argue that wood processing for both traditional (timber, paper, mass) and new products (textiles, fuels, plastics, etc.), international export, national use (e.g., increased wood construction), recreation and tourism can and should increase. None of the working group reports discuss whether the forest resource base is sufficient to fulfill all these potentially conflicting goals.

Further analysis, however, reveals that these diverse ways of using forests are not given equal weight. This can be exemplified by the titles of the reports, which reveal a bias toward industrial forest use over conservation and recreation for example. The titles of the reports by working groups 1 and 3 are the most clearly oriented to production: “*Growth, multifunctionality, value creation and the forest as a resource*” (Andersson et al. 2016) and “*Promotion of bio-based products and energy, smart transport, a world-class forestry and more exports*” (Andrén et al. 2016). The title of the report from

working group 2 also prioritizes the role of the forest as an industrial production site while mentioning nonproductive values: “*Timber production, other ecosystem services and the boundaries of nature.*” The title of the report from working group 4 is vaguer about it: “*International forest issues*” (Ackzell et al. 2016).

Reinforcing a production focus, the term “*neo-industrialisation*” (in Swedish *nyindustrialisering*) is repeatedly used in the documents to emphasize the revival of Swedish forestry in creating employment and economic growth, e.g., “*new products and new technology in a thriving bioeconomy will increase the importance of neo-industrialisation with refined bio-based products and more industrialised timber-based construction*” (Andrén et al. 2016, 20).

Historical references to the role of Swedish forestry in building the Swedish welfare state (author ref) are also used more explicitly to emphasize the possibility of reviving and intensifying a production relationship with the forest through a bioeconomy:

Swedish people have always had a close connection to the forest. The forest and its products have long been an important source of income for the country. The prospect of the forest becoming even more important is reasonably good in a future where society requires renewable raw materials for a thriving bioeconomy. (Andersson et al. 2016, 21)

The analysis clearly shows how the bioeconomy is framed as a way of reestablishing the central role of forestry in the Swedish economy and stimulating economic growth while contributing global environmental benefits.

### **Consensus is Key for Developing the Forest-Based Bioeconomy**

The NFP process is described as an important way of creating broad acceptance for increased industrial use of the forests: “*The forestry industry needs to become more generally accepted so that different markets, businesses and consumers can feel trust and positivity about forest-based products*” (Andrén et al. 2016, 21). As implied by the following quote, the forums for dialogue under the NFP process do not intend to create acceptance for diverse interests in the forest, but rather “[an] important component of the national forest programme is to provide a forum and forms of dialogue and collaboration that increase consensus on the role of forestry for society” (Andersson et al. 2016, 47).

Instead of embracing conflicting perspectives, conflicts are depicted as creating problems for the credibility of the Swedish forestry sector and obstructing the possibility of achieving a bioeconomy. “*The conflict between environmental organisations and the forestry industry gives a divided picture of how the forest should be used and what for. The credibility of the forestry industry is challenged by the conflict between production and conservation*” (Andrén et al. 2016, 27). Lack of consensus is also described as creating market uncertainty and, as such, undermining the bioeconomy: “*Internationally, there is often intensive debate about the sustainability of forestry. When the sustainability of the bioeconomy is questioned, this reflects market uncertainty about the goods and services that the forestry industry provides*” (Andrén et al. 2016).

Therefore, these conflicts need to disappear. We use the term “disappear” because there is nothing in the texts to indicate an ambition to reconcile different interests or negotiate tradeoffs between them. Rather we see several more or less explicit attempts

to undermine perspectives that challenge the reaching of consensus. In the report from working group 1, the failure to gain consensus on all issues is discursively downplayed by describing the lack of agreement as a result of individual participants disagreeing on some occasions (Andersson et al. 2016, 5):

We had good, open dialogue in meetings and general consensus was reached on many issues, although during the course of the work it emerged that some individual participants disagreed on some proposals. (Andersson et al. 2016, 5)

In an annex to the report, we find that this individual represented the Swedish Society for Nature Conservation (SSNC), which found the process description in the report sanitized.

A fundamental problem was that not all the proposals submitted were discussed by the entire working group. Instead, the secretariat decided which proposals should be included in the report. This meant that the group did not discuss, and was thus not given the opportunity to take a position on, all the proposals submitted. (Andersson et al. 2016, 45)

The direct and indirect emphasis on consensus in the reports indicates a wish to create one single story of Swedish forests in the bioeconomy that is not challenged.

### ***Forest Owners, Industry and State Actors Take Responsibility for the Forest-Based Bioeconomy***

The reduction of the meaning of the bioeconomy to denote primarily industrial production and economic growth also suggests that industry actors and forest owners, who are implicitly associated with industrial forestry, become positively connected to the bioeconomy. Other actors are marginalized or excluded. For example, forest owners are mentioned a total of 44 times and industry 33 times. Tourism and recreation (in Swedish “turist,” “turism” and “rekreation”) is also given a central place in Swedish forests and mentioned 43 times, whereas reindeer herding (“rennäring” or “renskötsel” in Swedish) is mentioned 14 times in total and Sámi people are mentioned just once in all four reports.

In the instance where the Sámi people are mentioned, their use of the forest is not framed as a relevant part of the bioeconomy, but rather as a hindrance that needs to be taken into consideration. “*In formulating proposals for future measures, it must be borne in mind that Sweden has undertaken to comply with international obligations towards the Sámi people*” (Berglund et al. 2016, 49).

The fourth working group (which worked on international forest issues) stood out by systematically using the term “the forest sphere” (instead of the more traditional term “forest sector”) to emphasize the relevance of a wider variety of participating actors than just the forestry industry and forest owners. The forest sphere was described as including:

forest owners, the forestry industry, forestry contractors, other businesses that process forest resources for experiences, products and services, managers as well as relevant parts of the state administration such as authorities and academia, and civil society including environmental and other stakeholder organisations involved in forest issues. (Ackzell et al. 2016, 18)

Despite this broader acknowledgement of a diverse set of relevant forest actors, the traditionally dominant actors (forest owners and the forestry industry) are still listed first and the Sámi population and reindeer herders are not mentioned at all.

Furthermore, the recommendations presented in that report primarily focus on issues of relevance to the forestry industry, including how to strengthen the position of the Swedish forestry industry internationally.

Throughout all working group reports, there is an emphasis on the importance of the industry and the state working together, organizing and taking responsibility for the bioeconomy transition: “*Swedish decision-makers and the Swedish forestry industry need to take a clear stance, a social contract, on conversion to a bioeconomy*” (Andrén et al. 2016, 29).

### **Technical Knowledge is Needed to Build the Forest-Based Bioeconomy**

Our analysis revealed that significant attention was paid to the role of knowledge in facilitating the transition to a forest-based bioeconomy. “[It] is a high priority that Sweden as a whole, including politicians, the forestry industry and academia, makes a declaration on and educates about the potential of the bioeconomy and its sustainability benefits” (Andrén et al. 2016, 42)

As indicated by the quote, particular knowledge is prioritized. Collaboration between the state, industry and the academic community is highlighted as important throughout the reports. However, the academic community is mainly limited to natural science and technical research, and knowledge is to be used instrumentally to stimulate the market-based bioeconomy transition.

Research environments need to improve their reception and implementation capacity, and be supported with more resources and funding, for basic and applied research and also for more commercially oriented research and development, in order to meet the need for innovation in the transition to a bioeconomy. (Andrén et al. 2016, 39)

The reports also signal strong optimism about technology. “*Increasingly efficient technology makes it possible to develop new materials and products from what are currently regarded as by-products*” (Andrén et al. 2016, 71). Another group argues that: “*Technical development will not slow down, so we need to adapt to it*” (Ackzell et al. 2016, 70). They ask how the forest sector should meet “[the] rapid rate of change and upcoming leaps in technology?” (Ackzell et al. 2016, 70), and argue that

A change in demand for forest raw materials will increase the need for new technology, most likely in order to produce more economically viable raw materials and optimise resource use in existing industrial processes. (Ackzell et al. 2016, 70)

Other types of knowledge and expertise than those relevant for technical progress are marginalized. No reports highlight the need for knowledge on the biodiversity effects of different bioeconomy pathways or the need for knowledge or experience of facilitating discussions between conflicting parties regarding what the bioeconomy should entail. No reports mention that Sámi reindeer herders have practical knowledge about the landscapes in which they live and operate. The only acknowledgement of the relevance of knowledge other than technical and natural science-based knowledge is one working group highlighting that we need more research on understanding “*the social value of*

*forests in their potential for creating well-being*” (Andersson et al. 2016, 26). However, these other forest values are, as the group points out, subordinate to forestry production, thus adhering to the overall discourse prioritizing neo-industrialisation.

Knowledge is also seen as a tool for creating consensus around what the bioeconomy entails, for example through education on the historical role of forestry in Sweden. *“Forest history is part of history teaching in schools. Forest history is valuable because it can help resolve the intrinsic conflicts in relations between forest production and conservation interests”* (Andersson et al. 2016, 29).

How consensus is to be created by increasing knowledge among those disagreeing with the dominant perspective is developed further in the next section.

### ***The Uninformed Public is a Threat to the Forest-Based Bioeconomy***

Forests are described as increasingly popular from a recreational point of view. *“The importance of peri-urban forests as a place for recreation, exercise and recovery is increasing. Experiences of hunting and mushroom and berry picking become bearers of identity and lifestyle”* (Berglund et al. 2016, 28).

Such recreational interests are not framed to include factual knowledge about forests, with the implication that Swedes had more of this in the past. Urbanization is described as weakening relationships with the forests, with the general (urban) public having less interest in and knowledge of forest issues: *“But something is changing in the relationship with forests. Urbanisation is reducing natural proximity to and knowledge of forests”* (Andersson et al. 2016, 21). *“For many, the forest has gone from being their ordinary living environment to being a destination for visits, which also reduces knowledge of the right of public access”* (Andersson et al. 2016, 16).<sup>2</sup>

According to some working groups, contemporary social norms, together with urbanization, result in the public’s lack of knowledge of forestry, resulting in exaggerated concerns about the future of forests. *“Urbanisation means that consumers are increasingly removed from nature, which can lead to a reduced understanding of the use of forests, anxiety about over-use of forest resources and increased emphasis on reducing deforestation”* (Ackzell et al. 2016, 75).

Increased public awareness about global social injustice and the exploitation of natural resources is described as both counterfactual and negative. This awareness has stimulated consumer demand for higher sustainability standards in Swedish forestry, despite (Swedish) forestry itself being sustainable as it is based on renewable resources and contributes to mitigating climate change:

Awareness is increasing among individuals about the pressure on natural resources and social injustices in the world, which are in conflict with the human pursuit of meaning, health and a good conscience. This is leading to growing use of consumer power to demand sustainability and labelling of origin./.../Although forests and forest products are renewable and climate-friendly, the requirements set for these tend to be more numerous and comprehensive than those set for fossil or non-renewable alternatives. (Ackzell et al. 2016, 68)

The reports repeatedly problematize how urbanization and a lack of proper communication between the forestry sector (framed as one homogenous group) and the general public makes public understanding of the true value of forests as a production resource

inconceivable. “*Knowledge about forests as an industrial raw material and their importance for the national economy is decreasing among younger members of the public*” (Andersson et al. 2016, 16).

An important way to facilitate the “correct” public understanding of Swedish forests, according to the reports, is to tell the story of Swedish forests. “*In order to understand the forest we see now, we need to hear the story of the forest*” (Andersson et al. 2016, 31).

## Discussion: A Story of Swedish Forests in the Bioeconomy

Our analysis revealed five storylines that together construct a strong story of the Swedish forest-based bioeconomy. Storyline 1 establishes the relationship between the bioeconomy and forestry as a form of neo-industrialisation, and storylines 2-5 address the opportunities and barriers to the establishment of a neo-industrialisation based on intensive exploitation of forest resources:

1. A bioeconomy will revive Swedish forestry in a sustainable way through neo-industrialisation
2. Consensus is key to developing the forest-based bioeconomy
3. Forest owners, industry and state actors take responsibility for the forest-based bioeconomy
4. Technical knowledge is needed to build the forest-based bioeconomy
5. The uninformed public is a threat to the forest-based bioeconomy.

In summary, these storylines unite in a story about neo-industrialisation, driven by the private sector and supported by the state, simultaneously reviving forestry and establishing the bioeconomy. The story of the emerging Swedish bioeconomy romanticizes the period before environmental and social values and a more diverse set of actors were introduced into Swedish forest governance. It facilitates a discourse coalition composed by the state and industry, indirectly driving the idea that actors who are not in favor of the new-industrialisation path represent obstacles to the transition to a bioeconomy.

The Swedish story not only revives and legitimizes past discourse coalitions of the industry and the state, but is also firmly situated within, and supported by, the wider bio-resource centered narrative of the bioeconomy (Hausknost et al. 2017). It reproduces more established European discourses on weak sustainability and ecomodernism, where forests are signified as an industrial production site providing biomass, carbon sinks and fossil fuel replacement (Pülzl, Kleinschmit, and Arts 2014), and where knowledge for innovation and technological progress are prioritized over other knowledges (Mustalahti 2018; Staffas, Gustavsson, and McCormick 2013; van Renssen 2014). This discursive formation of the bioeconomy in effect means that forestry in itself is sustainable because it captures carbon and helps us move away from fossil resources. As such, it further legitimates a reversal to forest governance concerning only the private sector and the state.

The historical exclusion of indigenous and nonproductive interests in the forest that is revived with the Swedish forest bioeconomy follows a trend in forest policy, documented particularly in contexts of the Global South, where dominant stories about forests construct technical, scientific and bureaucratic knowledges as true, while rendering local knowledges (author ref, Berglund 2001; Faye 2015; Ojha 2006) or forms of knowledge that might be seen as a threat to capital accumulation (Li 2007; Winkel 2012) as irrelevant or false. Similar to our findings on the discursive effects of the bioeconomy, discourses of forests and climate change have repeatedly been shown to favor forest uses that lead to cost-effective carbon emission reductions, while undermining indigenous forest uses and biodiversity (Nel, 2015, Boyd et al. 2009). Thus there are clear links to be made between how stories on the bioeconomy and climate change mitigation work to discursively undermine nonproductive interests and forest uses.

The analysis also reveals trends that are more specific to Swedish forest policymaking, particularly the significant attention given to consensus. Some studies on the bioeconomy mention consensus, but commonly in a descriptive manner, outlining the issues where consensus can be found, or mentioning the importance of not assuming consensus around the meaning of the bioeconomy (Bauer 2018; Hausknost et al. 2017; Kröger and Raitio 2017). Pätäri et al. (2016) and Devaney and Henchion (2018) use an analytical model focusing on dissensus rather than consensus for the sake of capturing a wide range of expert ideas on the role of the European pulp and paper industry and the Irish bioeconomy respectively, but the authors do not theorize the relevance of this. In their study of Swedish forestry policy, Lindahl et al. (2017) indicate that consensus has been an important guideline for inclusiveness and mutual respect, and conclude that, despite this, Swedish forestry policy continues to favor industrial interests. Studying the Swedish NFP, Johansson (2016) points out that consensus-oriented decision-making is having increasing influence on policymaking in Sweden and beyond. She frames this as the engagement of a wider segment of society in collaborative governance and points out that this has been the aim of the NFP. Studying the earlier parts of the NFP process (up to the point when the working groups studied in the present paper were formed), Johansson (2016) concludes that the NFP process failed to be inclusive of diverse values and interests in Swedish forests (which we also show for the later stages of the NFP process). It can be noted that both Lindahl et al. (2017) and Johansson (2016) point out that consensus is an important concept in Swedish forest policymaking, and describe it as meaning the inclusion of diverse values and interests, while both studies, similarly to our findings here, show that consensus does not have this discursive effect, but rather leads to the marginalization of perspectives that do not clearly align with a productive focus on forests. Neither Lindahl et al. (2017) nor Johansson (2016), however, explore this discrepancy further. Nevertheless, we would suggest that the findings of these studies, as well as our findings here, indicate that its further exploration is essential.

The role and meaning of consensus in public deliberation is disputed and there are different understandings about the effects of focusing on consensus in public deliberation. Habermas envisions free deliberation of public matters where people consciously put their differences aside and rationally discuss an issue, which will result in consensus about what the correct action is on a certain issue (Canovan 1983). This view of consensus aligns well with how the working group reports were produced. As shown in the

results, the reports use “consensus” as something that can lead to one solution. There is also a clear hope communicated by the reports that if everyone has enough or the correct form of knowledge about Swedish forestry, consensus about the role of the forests in the bioeconomy will be achieved.

The possibility of reaching consensus, or even the appropriateness of striving for it, have been questioned by scholars such as Fraser (1990) and Mouffe (2011), who point out that the consensus imagined by Habermas was only possible because the situation he studied was not in fact a situation of broad societal inclusion. Habermas’s development of the theory of a public sphere was based in a specific historical context of coffee houses in the Ottoman Empire, in which women and the working class, for example, were not allowed. In effect, this was consensus through exclusion. Fraser (1990) has suggested that Habermas’s idea that we can leave our differences behind to achieve an inclusive discussion actually serves to hide inequality. This is what we see happening in the working group reports, where the Sámi population in particular is practically invisible.

Mouffe (2011, 121) advocates for a “conflictual consensus” where participants in a democracy need not agree on the issues debated, but must agree on the format in which this is done. Fraser (1990), who like Mouffe sees conflict as inherent in society, suggests that one solution to a more inclusive society is the development of “counter publics.” By this she means sub-groups within society that develop their own arenas in which they can deliberate together on “their needs, objectives and strategies” and in doing so become better equipped at “articulat[ing] and defend[ing] their interests in the comprehensive public sphere” (Fraser 1990, 66). To facilitate this, Fraser (1990, 64) says that we need to “unbracket inequalities in the sense of explicitly thematising them.” If we take this suggestion as having a bearing on public deliberation on the role of Swedish forests, we might suggest that rather than grouping different interest groups together to deliberate, as was done in the work for the working group reports, stakeholder groups with similar interests might instead have been grouped together to write down their perspectives, so that all perspectives on the forests in the bioeconomy are on the table and official. In the next step a transparent discussion would be needed about which values and interests are prioritized and why, and whether stakeholders who feel that they lose out in the dominant path for the bioeconomy can be compensated in some way. This would also be more in line with the pluralistic and diverse decision-making that should characterize NFP processes in accordance with global agreements (Pülzl and Rametsteiner 2002).

## Conclusions

Two main conclusions can be drawn from this study. First, our study shows that the Swedish forest-based bioeconomy is firmly established within wider European discourses on the bioeconomy and has boosted a production-oriented perspective on forests, in which environmental and social values, and in particular the interests of Sweden’s indigenous Sámi reindeer herders, remain marginalized. The material effects of this could be an important focus of future studies.

Secondly, our analysis shows that the use of “consensus” in the NFP follows a tradition in Swedish forest policymaking where the focus on consensus leads to the marginalization of values and interests that do not clearly align with the dominant story about Swedish forests. Based on these findings, we recommend that forest decision-makers critically reflect on and discuss how consensus could instead be operationalized to ensure the inclusion of minority perspectives, for example by focusing on “conflictual consensus” (Mouffe 2011, 121). This would facilitate a more inclusive public deliberation about the role of Swedish forests in the bioeconomy.

## Notes

1. i.e., based on the notion of ecological modernisation (Mol and Spaargaren 2000).
2. The right of public access (in Swedish “Allemansrätten”) is unique to Sweden and written in the constitution. It gives long-standing public access to nature on public and privately-owned land.

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## References

- Ackzell, L., P. Björkman, L. Bruce, H. Dahlfors, M. Enander, M. Hedblom, P. Larsson, J. Lindman, L. Palm, H. Djurberg, et al. 2016. Internationella skogsfrågor: Underlagsrapport från arbetsgrupp 4 inom nationellt skogsprogram. [International forest issues: Report from working group 4 in the National Forest Program]. Nationella Skogsprogrammet.
- Adger, W. N., T. A. Benjaminsen, K. Brown, and H. Svarstad. 2001. Advancing a political ecology of global environmental discourses. *Development and Change* 32 (4):681–715. doi:10.1111/1467-7660.00222.
- Andersson, G., M. Berg, U. Bergkvist, K. Ewelönn, M. Forslund, S. Hansson, E. Hjærtfors, D. Ligné, L. Möller, O. Nyman, et al. 2016. Tillväxt, mångbruk, värdeskapande av skogen som resurs: Underlagsrapport från arbetsgrupp 1 inom nationellt skogsprogram. [Growth, multifunctionality, value creation and the forest as a resource: Report from working group 1 in the National Forest Program.] Nationella Skogsprogrammet.
- Andrén, H., H. Arvonen, D. Badman, Y. Daoson, E. Dotzauer, A. Furness, M. Hollander, M. Larsson, P. Lärkeryd, S. Nilsson, et al. 2016. Främjande av biobaserade produkter och energi, smarta transporter, en skogsindustri i världsklass och ökad export: Underlagsrapport från arbetsgrupp 3 inom nationellt skogsprogram. [Promotion of bio-based products and energy, smart transport, a world-class forestry and more exports: Report from working group 3 in the National Forest Program.] Nationella Skogsprogrammet.
- Appelstrand, M. 2007. *The environmental goal of Swedish forestry – Regulation and voluntariness*. Lund: Lunds Studies in Sociology of Law.
- Bacchi, C. L. 2009. *Analysing policy: What’s the problem represented to be?* Frenchs Forest: Pearson Australia.
- Bauer, F. 2018. Narratives of biorefinery innovation for the bioeconomy: Conflict, consensus or confusion?. *Environmental Innovation and Societal Transitions* 28:96–107. doi:10.1016/j.eist.2018.01.005.
- Berglund, E. 2001. Facts, beliefs and biases: Perspectives on forest conservation in Finland. *Journal of Environmental Planning and Management* 44 (6):833–49. doi:10.1080/09640560120087598.

- Berglund, L., J. Bodegård, O. Johansson, O. Kårén, M. Larsson-Stern, G. Lindén, J. Munthe, M. Sahlin, F. Widemo, J. Wik-Karlsson, and G. Örlander. 2016. Virkesproduktion, övriga ekosystemtjänster och naturens gränser: Underlagsrapport från arbetsgrupp 2 inom nationellt skogsprogram. [Timber production, other ecosystem services and the boundaries of nature: Report from working group 2 in the National Forest Program.] Nationella skogsprogrammet.
- Birch, K. 2006. The neoliberal underpinnings of the bioeconomy: The ideological discourses and practices of economic competitiveness. *Genomics, Society and Policy* 2 (3):1–15. doi:10.1186/1746-5354-2-3-1.
- Boyd, E., N. Hultman, J. Timmons Roberts, E. Corbera, J. Cole, A. Bozmoski, J. Ebeling, R. Tippman, P. Mann, K. Brown, et al. 2009. Reforming the CDM for sustainable development: lessons learned and policy futures. *Environmental Science & Policy* 12 (7):820–31. doi:10.1016/j.envsci.2009.06.007.
- Bugge, M., T. Hansen, and A. Klitkou. 2016. What is the bioeconomy? A review of the literature. *Sustainability* 8 (7):691. doi:10.3390/su8070691.
- Canovan, M. 1983. A case of distorted communication: A note on Habermas and Arendt. *Political Theory* 11 (1):105–16. doi:10.1177/0090591783011001006.
- Devaney, L., and M. Henchion. 2018. Consensus, caveats and conditions: International learnings for bioeconomy development. *Journal of Cleaner Production* 174:1400–11. doi:10.1016/j.jclepro.2017.11.047.
- Dubois, O., and M. Gomez San Juan. 2016. How sustainability is addressed in official bioeconomy strategies at international, national and regional levels: An overview. Environment and Natural Resources Management. Working Paper (FAO) eng no. 63.
- European Commission. 2012. *Innovating for sustainable growth: A bioeconomy for Europe*. Brussels: European Commission.
- Faye, P. 2015. Choice and power: Resistance to technical domination in Senegal's forest decentralization. *Forest Policy and Economics* 60:19–26. doi:10.1016/j.forpol.2014.10.004.
- Felton, A., L. Gustafsson, J. M. Roberge, T. Ranius, J. Hjältén, J. Rudolphi, M. Lindbladh, J. Weslien, L. Rist, J. Brunet, et al. 2016. How climate change adaptation and mitigation strategies can threaten or enhance the biodiversity of production forests: Insights from Sweden. *Biological Conservation* 194:11–20. doi:10.1016/j.biocon.2015.11.030.
- Food and Agriculture Organization of the United Nations (FAO). 2018. National Forest Programme (NFP). <http://www.fao.org/forestry/nfp/en/> (accessed January 29, 2020).
- Fraser, N. 1990. Rethinking the public sphere: A contribution to the critique of actually existing democracy. *Social Text* 25 (26):56–80. doi:10.2307/466240.
- Georgescu-Roegen, N. 1977. Inequality, limits and growth from a bioeconomic viewpoint. *Review of Social Economy* 35 (3):361–75. doi:10.1080/00346767700000041.
- Hajer, M. A. 1995. *The politics of environmental discourse: Ecological modernization and the policy process*. Oxford: Clarendon Press.
- Hajer, M. A. 2009. *Authoritative governance: Policy making in the age of mediatization*. Oxford: Oxford University Press.
- Hausknot, D., E. Schriebl, C. Lauk, and G. Kalt. 2017. A transition to which bioeconomy? An exploration of diverging techno-political choices. *Sustainability* 9 (4):669. doi:10.3390/su9040669.
- Hodge, D., V. Brukas, and A. Giurca. 2017. Forests in a bioeconomy: Bridge, boundary or divide?. *Scandinavian Journal of Forest Research* 32:582–7. doi:10.1080/02827581.2017.1315833.
- Holmgren, S. 2015. *Governing forests in a changing climate - exploring patterns of thought at the climate change - forest policy intersection*. Department of Forest Products, Swedish University of Agricultural Sciences.
- Johansson, J. 2016. Participation and deliberation in Swedish forest governance: The process of initiating a National Forest Program. *Forest Policy and Economics* 70:137–46. doi:10.1016/j.forpol.2016.06.001.
- Kivinen, S., J. Moen, A. Berg, and Å. Eriksson. 2010. Effects of modern forest management on winter grazing resources for reindeer in Sweden. *Ambio* 39 (4):269–78. doi:10.1007/s13280-010-0044-1.

- Kröger, M., and K. Raitio. 2017. Finnish forest policy in the era of bioeconomy: A pathway to sustainability? *Forest Policy and Economics* 77:6–15. doi:10.1016/j.forpol.2016.12.003.
- KSLA. 2009. *The Swedish forestry model*. Stockholm: KSLA.
- Levidow, L., K. Birch, and T. Papaioannou. 2012. Divergent paradigms of European agro-food innovation the knowledge-based bio-economy (KBBE) as an R&D agenda. *Science, Technology & Human Values* 38 (1):94–125. doi:10.1177/0162243912438143.
- Li, T. M. 2007. Practices of assemblage and community forest management. *Economy and Society* 36 (2):263–93.
- Lindahl, K. B., A. Sténs, C. Sandström, J. Johansson, R. Lidskog, T. Ranius, and J.-M. Roberge. 2017. The Swedish forestry model: More of everything? *Forest Policy and Economics* 77:44–55. doi:10.1016/j.forpol.2015.10.012.
- Lovrić, M., N. Lovrić, and R. Mavsar. 2020. Mapping forest-based bioeconomy research in Europe. *Forest Policy and Economics* 110:101874. doi:10.1016/j.forpol.2019.01.019.
- Mol, A. P., and G. Spaargaren. 2000. Ecological modernisation theory in debate: a review. *Environmental Politics* 9 (1):17–49. doi:10.1080/09644010008414511.
- Mouffe, C. 2011. *On the political*. London/New York: Routledge.
- Mustalahti, I. 2018. The responsive bioeconomy: The need for inclusion of citizens and environmental capability in the forest based bioeconomy. *Journal of Cleaner Production* 172:3781–90. doi:10.1016/j.jclepro.2017.06.132.
- Nel, A. 2015. The choreography of sacrifice: Market environmentalism, biopolitics and environmental damage. *Geoforum* 65:246–54. doi:10.1016/j.geoforum.2015.08.011.
- OECD. 2009. *The bioeconomy to 2030: Designing a policy agenda* Paris: OECD Organisation for Economic Co-operation and Development.
- Ojha, H. R. 2006. Techno-bureaucratic doxa and challenges for deliberative governance: The case of community forestry policy and practice in Nepal. *Policy and Society* 25 (2):131–75. doi:10.1016/S1449-4035(06)70077-7.
- Pätäri, S., A. Tuppurä, A. Toppinen, and J. Korhonen. 2016. Global sustainability megaforges in shaping the future of the European pulp and paper industry towards a bioeconomy. *Forest Policy and Economics* 66:38–46. doi:10.1016/j.forpol.2015.10.009.
- Pfau, S. F., J. E. Hagens, B. Dankbaar, and A. J. Smits. 2014. Visions of sustainability in bioeconomy research. *Sustainability* 6 (3):1222–49. doi:10.3390/su6031222.
- Pülzl, H., and E. Rametsteiner. 2002. Grounding international modes of governance into National Forest Programmes. *Forest Policy and Economics* 4 (4):259–68. doi:10.1016/S1389-9341(02)00069-2.
- Pülzl, H., D. Kleinschmit, and B. Arts. 2014. Bioeconomy—an emerging meta-discourse affecting forest discourses? *Scandinavian Journal of Forest Research* 29 (4):386–93. doi:10.1080/02827581.2014.920044.
- Ramcilovic-Suominen, S., and H. Pülzl. 2018. Sustainable development – A ‘selling point’ of the emerging EU bioeconomy policy framework?. *Journal of Cleaner Production* 172:4170–80. doi:10.1016/j.jclepro.2016.12.157.
- Robson, C., and K. McCartan. 2011. *Real world research: a resource for users of social research methods in applied settings*. 3rd ed. Chichester: Wiley.
- Roe, E. 1994. *Narrative policy analysis: Theory and practice*. Durham; London: Duke University Press.
- Sandström, P., C. Sandström, J. Svensson, L. Jougda, and K. Baer. 2012. Participatory GIS to mitigate conflicts between reindeer husbandry and forestry in Vilhelmina Model Forest, Sweden. *The Forestry Chronicle* 88 (03):254–60. doi:10.5558/tfc2012-051.
- Sandström, P., N. Cory, J. Svensson, H. Hedenås, L. Jougda, and N. Borchert. 2016. On the decline of ground lichen forests in the Swedish boreal landscape: Implications for reindeer husbandry and sustainable forest management. *Ambio* 45 (4):415–29. doi:10.1007/s13280-015-0759-0.
- Sanz-Hernández, A., E. Esteban, and P. Garrido. 2019. Transition to a bioeconomy: Perspectives from social sciences. *Journal of Cleaner Production* 224:107–19. doi:10.1016/j.jclepro.2019.03.168.

- Schmidt, O., S. Padel, and L. Levidow. 2012. The bio-economy concept and knowledge base in a public goods and farmer perspective. *Bio-Based and Applied Economics* 1 (1):47–63.
- Skogsstyrelsen. 2013. *Förstudie om ett Nationellt Skogsprogram för Sverige - Omvärldsanalys. Meddelande 6 2013. [Pre-study on a National Forest Program for Sweden. Message 6 2013].* Jönköping: The Swedish Forest Agency.
- Staffas, L., M. Gustavsson, and K. McCormick. 2013. Strategies and policies for the bioeconomy and bio-based economy: An analysis of official national approaches. *Sustainability* 5 (6): 2751–69. doi:10.3390/su5062751.
- Sundström, G. 2010. In search of democracy. The process behind the Swedish forest-sector objectives. *Organizing democracy: the construction of agency in practice*, eds. G. Sundström, L. Soneryd, and S. Furusten. Cheltenham: Edward Elgar.
- Swedish Forest Agency. 2019. Skogsvårdslagstiftningen, gällande regler från 1 april 2019 [The Swedish Forestry Act, rules applicable from April 1, 2019]. Jönköping: Skogsstyrelsen.
- Swedish Forest Agency. 2014. *Swedish statistical yearbook of forestry 2014*, ed. L. Christiansen. Jönköping: Swedish Forest Agency.
- Swedish Government Bill 2015/16:1 Budgetpropositionen för 2016 Prop. 2015/16:1 Utgiftsområde 23: Areella näringar, landsbygd och livsmedel. [Budget Bill for 2016 Bill 2015/16:1]. <https://www.regeringen.se/4a6c27/contentassets/49618bc4fd94b6081d9696f55bc7f8d/utgiftsomrade-23-areella-naringar-landsbygd-och-livsmedel.pdf> (accessed June 16, 2019).
- van Renssen, S. 2014. A bioeconomy to fight climate change. *Nature Climate Change* 4 (11): 951–3. doi:10.1038/nclimate2419.
- Vivien, F.-D., M. Nieddu, N. Befort, R. Debref, and M. Giampietro. 2019. The hijacking of the bioeconomy. *Ecological Economics* 159:189–97. doi:10.1016/j.ecolecon.2019.01.027.
- Widmark, C. 2009. Forestry and reindeer husbandry in northern Sweden—the development of a land use conflict. *Rangifer* 26 (2):43–54. doi:10.7557/2.26.2.187.
- Wiersum, K. F. 1995. 200 years of sustainability in forestry: Lessons from history. *Environmental Management* 19 (3):321–9. doi:10.1007/BF02471975.
- Winkel, G. 2012. Foucault in the forests—A review of the use of ‘Foucauldian’ concepts in forest policy analysis. *Forest Policy and Economics* 16:81–92. doi:10.1016/j.forpol.2010.11.009.
- Zachrisson, A., and K. Beland Lindahl. 2013. Conflict resolution through collaboration: Preconditions and limitations in forest and nature conservation controversies. *Forest Policy and Economics* 33:39–46. doi:10.1016/j.forpol.2013.04.008.