

Finnish forest policy in the era of bioeconomy

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Highlights

- An assessment of the historical roots and key political economic dynamics that affect forest policy in Finland.
- Identification of a dominant forest policy pathway through the analysis of official documents from 2010–2015.
- An analysis of the politics and power relations in the implementation of the pathway during the Forest Act review process.
- The dominant pathway aims at “more of everything”, but implementation emphasises productivism and ignores goal conflicts.
- Global bioeconomy meta-discourse allows policies to return to productivism and effectively ignore sustainability challenges.

Abstract

This article analyses Finland's forest policy from the perspective of the Pathways to Sustainability approach. The historical roots and political dynamics between key actor coalitions, as well as their key concerns around sustainability in forest policy are first outlined. After this contextualisation, we identify the current dominant pathway by analysing recent official policy documents (2010–2015) that focus on the future challenges for Finnish forestry. Additionally, we analyse the implementation of the pathway through the revision of the Forest Act (2011 – 2013). Our analysis shows that the dominant pathway to sustainability in Finnish forest policy aims at reconciling the different dimensions of sustainability by producing “more of everything”. Yet there are underlying conflicts and priorities between different goals within this pathway, which are not openly addressed. The dominant pathway has co-aligned with the global bioeconomy meta-discourse that has contributed to the re-legitimation of policy goals from previous industrial forestry eras. Prioritisation of production over ecological concerns are, however, challenged by the environmental coalition and in conflict with the views of the general public that has become more conscious about conservation, biodiversity and recreation. This resulted in intense struggles during the revision of the Forest Act, however with the production goals persisting over conservation. Our analysis concludes that the dominant pathway aims to safeguard increased timber production, and the studied period saw a political shift back towards more hierarchical policymaking that promotes a productivist forest policy under the guise of a “forest bioeconomy”.

Keywords

- Forest policy;
- Finland;
- Sustainability;
- Forestry;
- Bioeconomy;
- Political economy

1. Introduction

Finland, with its extensive forest cover, long history of forestry ([Kotilainen and Rytteri, 2011](#) and [Kuisma, 1997](#)), and ambitions to be a forerunner in the new global bioeconomy ([Kröger, 2016](#), [OECD, 2006](#) and [Pülz et al., 2014](#)), presents an excellent opportunity for studying recent forest policy responses to sustainability challenges. Most countries, including Finland, argue that they want to promote sustainable development, but what does this actually entail? This paper builds on the notion that sustainability remains a contested concept. Rather than a concept to be objectively defined, [Leach et al. \(2010\)](#) maintain that sustainability is essentially a political process that can be analysed as the tension, or struggle, between competing pathways that aim to achieve sustainability. The negotiation of policy shifts between competing parties and definitions of the sustainability challenge can be seen as a crucial feature of democratic and legitimate forest policy processes. The assessment of sustainability requires analyses of politics, political economy, and discourses; our goal is to answer to this call.

Earlier studies have analysed the Finnish forest policy regime ([Kotilainen and Rytteri, 2011](#)) or forestry model ([Donner-Amnell, 2004](#) and [Lehtinen et al., 2004](#)) and how understandings of sustainability have changed within it throughout history. The conflicts over forest conservation and forest policy priorities between timber production interests, environmentalists, and indigenous Sámi people have received ample attention (e.g. [Lawrence, 2007](#), [Raitio, 2013](#), [Saarikoski and Raitio, 2013](#), [Sarkki and Heikkinen, 2010](#) and [Sarkki and Heikkinen, 2015](#)). Several studies depict a long history of polarized relations between what has been identified as a Forestry coalition and an Environmental coalition ([Harrinkari et al., 2016](#), [Hellström and Reunala, 1995](#), [Hellström, 2001](#) and [Rantala and Primmer, 2003](#)). While timber production and economically sustainable harvesting have traditionally been the two foci of Finnish forest policy ([Kotilainen and Rytteri, 2011](#)), the issue of biodiversity has increasingly surfaced as the most important forest value for citizens ([Valkeapää and Karppinen, 2013](#)). In spite of this, a legitimacy deficit has persisted due to perceived continued dominance of economic goals and interests, both in the governance of publicly owned forests ([Raitio and Harkki, 2014](#)) and in the overall national forest policy and planning processes ([Pappila and Pölönen, 2012](#) and [Valkeapää, 2014](#)).

Our analysis in this paper seeks to understand the causes of the identified legitimacy deficit by looking at how sustainability challenges are framed in the dominant pathway to sustainability in Finnish forest policy. Building on the existing research on major policy coalitions, our analysis looks at to what extent and how the dominant pathway reflects the goals and problem formulations of the different coalitions, and what the policy implementation processes suggest about power relations between them. We bring the research on Finnish forest policy up-to-date by focusing on the most recent official forest policy documents (2010–2015), and the contested policy implementation process regarding the revision of the Forest Act (2010 – 2013).

Important changes in the Finnish forest sector during the 2010s highlight the topicality of analysing possible shifts in the dominant sustainability pathway. During the late 2000s, several pulp and paper companies

moved production capacity to Brazil and Uruguay, dismissing thousands of employees ([Kotilainen and Rytteri, 2011](#) and [Kröger, 2013a](#)). The closing of mills drew attention to how the Finnish forest industry was no longer competitive on a global level. At the same time, international climate policies and discourses during the 2010s redefined the role of the forest sector as a core in the emerging bioeconomy, which the Finnish government has readily embraced as a key growth paradigm ([Kröger, 2016](#) and [OECD, 2006](#)). [Pülz et al. \(2014\)](#) consider bioeconomy to be an important global meta-discourse affecting national forest policies, and we make some notes on how that meta-discourse has been adopted to Finnish forest policies.

We first outline our theoretical framework, which is based upon, but not limited to, the pathways to sustainability approach, and introduce the policy assessment protocol ([Section 2](#)). After presenting the data and methods ([Section 3](#)), we situate the current debates in their historical-contextual setting in Finland, outlining the key actors and coalitions, as well as relevant historic policy shifts ([Section 4](#)). Our analysis of the governmental policy documents ([Section 5](#)) suggests that the dominant pathway is built on a “more of everything” strategy (quite similarly to Sweden, see [Beland Lindahl et al., 2015b](#), this issue), but with a clear hierarchy of goals, where some goals are a higher priority while others are less so. We provide an assessment of these goal conflicts. The reforming of the Forest Act (2011–2013) is presented ([Section 6](#)) to show how differences are dealt with during the implementation of policies. Lastly, we discuss the theoretical and policy implications of the findings ([Section 7](#)), and illustrate how the studied period saw a political shift back towards more hierarchical policymaking that promotes a productivist forest policy under the guise of a “forest bioeconomy”.

2. Theory and methods

We build on an analytical framework that applies the STEPS pathways approach ([Leach et al., 2010](#)), as outlined in an article of this special issue that focuses on the Swedish situation ([Beland Lindahl et al., 2015b](#)) and by [Beland Lindahl et al. \(2015a\)](#). The pathways approach considers sustainability and development as essentially political processes, in which different pathways can be defined as possible trajectories for knowledge, intervention, and change that prioritise different goals, values, and functions ([Leach et al., 2010](#)). Furthermore, pathways are in constant transformation, some gaining momentum and others fading away ([Leach et al., 2007](#)). Forest policies, from this perspective, can be thought of as a dynamic outcome of a struggle between different pathways that can lead to different degrees of sustainability.

According to [Leach et al. \(2010\)](#), issues and problems can be framed in diverse ways by different actors. How, and which, problems are framed as central sustainability challenges, and by whom, are all key questions (see also [Schön and Rein, 1994](#)). These are the policy inputs, which lead to policy outputs. Policy frames operate on two levels: the level of perception affects how we interpret the world, and these perceptions, in turn, lead to action bias, which guides our actions (see [Perri 6, 2005](#), [Schön and Rein, 1994](#) and [Raitio, 2013](#)). People may be unaware of their frames, but frames influence how they think, speak, and act (e.g. [Arts and Buizer, 2009](#)). [Schön and Rein \(1994: 29\)](#) use the concept of frame conflicts to denote controversies in which different parties see issues and policies in conflicting ways. The way parties define a problem (e.g. sustainability challenge) also affects the strategies they will use to tackle the problem and the solution they propose. The pathways approach recognizes the analysis of political framing of knowledge as integral to its goal of broadening the alternatives available to policy-makers ([Leach et al., 2010](#)).

The structure of this article is based on the analytical framework developed by [Beland Lindahl et al., 2015a](#) and [Beland Lindahl et al., 2015b](#), (Fig. 1). Hence, it distinguishes between frames related to the “inputs” and frames, as well as the related actions, related to the “output” side. Our analytical questions (see [Table 1](#)) concerning the input side focus on *problem formulation* (What are the key sustainability

challenges?) and *goals* and possible goal conflicts (What goals are formulated to address the challenges? Is “bioeconomy” mentioned, and where and when?). The questions that are related to the output side focus on *implementation* (What actions are taken? How is the implementation process justified?) and *outcomes* (How has the policymaking process influenced politics, power relations, and the order of policy goals?).

Table 1. Protocol for the assessment of sustainability frames and policy pathways.

Modes of inquiry	Guiding questions	Specific questions about the policy	Questions for analysing the politics behind the policies and policy relations
Context (Section 4)	What are the key actors and actor-coalitions behind the contemporary pathways?	How has sustainability been pursued historically in the Finnish forest policy?	What have been the key features of the dominant forestry model? How has politics influenced the political economy of forestry in this context?
Input (Section 5)	What are the sustainability challenges, if any, that are identified/framed in the key policy documents?	What goals have been formulated/framed to address these challenges? Is “bioeconomy” mentioned, and where and when?	Are conflicts/tensions between the goals identified? If yes, are there guidelines for how the goal conflicts are to be negotiated? If no, are there underlying goal conflicts that can be identified for example in relation to issues highlighted by the coalitions and/or earlier research?
Output (Section 6)	How have the policy goals been implemented during the revision of the Forest Act?	What does the policy implementation process show about the hierarchy of different goals within the dominant frame on sustainability challenges?	What does the policy implementation process suggest about power relations between the coalitions?
Global setting (Section 7)	Has the dominant pathway co-aligned with any global discourses and/or developments? If so, which ones?	How has the global/national frame-alignment taken place, and where is it visible?	How has the global meta-discourse of bioeconomy influenced sustainability framing and policy-making in an important national context?

In addition to investigating the dominant pathway, we have incorporated protocol questions to analyse the power dynamics between different actors and institutions during the policy formulation and implementation processes (questions related to implementation and outcomes). Power relations underlying the struggles between competing pathways have received less attention in forestry research

that applies the pathways theory than the study of frames and discourses. Besides contributing a Finnish case study to a special issue on the pathways to sustainability within the forest policy of different countries, we also strive to add knowledge to the pathways to sustainability approach and the general sustainability field (as represented e.g. by [Scoones, 2015](#)) by providing an analysis of the role of power dynamics in the implementation of a dominant pathway.

Frames are dependent on a variety of factors; therefore the content of any frame also needs to be interpreted in its historical and political context. Consequently, the first part of our analysis ([Section 4](#)) focuses on the historical roots and key political dynamics of Finnish forest governance and policy, before discussing the frames on the input side ([Section 5](#)) and implementation from the output side ([Section 6](#)), as well as how the new pathways and politics of policy-making co-align with the global setting ([Section 7](#)). The protocol, which includes detailed questions for the assessment of sustainability frames and policy pathways, is outlined in [Table 1](#).

3. Data

The key policy documents analysed extend from 2010 to 2015 ([Table 2](#)). The *National Forest Program (NFP)* has traditionally been the key document that outlines the direction of Finnish forest policy. The latest NFP was published in 2010 ([Anon, 2010](#)) and is valid from 2010 to 2020. Soon after the NFP was endorsed, the government noted both national and global changes that required a more long-term assessment of the situation. A Governmental Forest Policy Review ([Anon, 2014](#)), which estimated the situation until 2050, was carried out. It was then operationalised in a National Forest Strategy 2025 ([Anon, 2015](#)), which replaced the previous NFP. Together, these policy documents provide a short-, mid-, and long-term analysis of the challenges and goals (input) of the dominant pathway to sustainability in Finnish forest policy.

Table 2. Forest policy documents selected for analysis.

Document	Scope and relevance
National Forest Program 2015 (Anon, 2010)	A policy document that outlines the most important forest policy goals in the near future, from 2010 to 2020.
Governmental Forest Policy Review (Anon, 2014)	A policy document with long time span, stretching to 2050, which was initiated to respond to rapid changes in the global and national context of forest policy after the endorsement of the National Forest Program.
National Forest Strategy 2025 (Anon, 2015)	An operationalisation of the Governmental Review that includes a prioritisation of the goals and detailed steps to achieve them by the year 2025.
Memorandum on the Diversification of the Forest Management Methods - Continuation (Anon, 2012)	The report provides proposals for revising the Forest Act, drafted by a multi-stakeholder working group. It also includes three dissenting opinions by actors belonging to the Environmental coalition, providing material to the analysis on the dynamics between competing pathways to sustainability.
Bill to reform the Finnish Forest Act (Government Bill HE 75/2013 vp)	The revision of the Forest Act was one of concrete steps identified in the National Forest Program for the implementation of the goals outlined therein.

Document	Scope and relevance
Assessment of the Bill on the Finnish Forest Act by three research institutions (Kostamo et al., 2012)	The assessment was commissioned by the Ministry of Agriculture and Forestry as a response to critique on the proposed Bill. The process around the Evaluation Report and its content provide material to the analysis on the dynamics between competing pathways to sustainability.

On the output side, we analysed the implementation of the National Forest Program during the contested revision of the Forest Act between 2010 and 2013. The Forest Act is the key piece of legislation that regulates forestry, as well as the possible goal conflicts surrounding sustainable forest management goals. The data comprise the working group report preceding the legislative bill ([Anon, 2012](#)), the legislative bill itself (HE 75/2013 vp), and an evaluation of the legislative bill ([Kostamo et al., 2012](#)). We have chosen to focus on the policy documents that address forest policy as a whole, and have not included specific policy documents or implementation processes related to such issues as biodiversity conservation, because a single policy goal focus does not provide answers to the key question in a pathways analysis, that is, the reconciliation of multiple, conflicting goals and pathways. However, specific policies are referred to when they were identified as being important to national policymaking and political debates about the sustainability of Finnish forest policy. Future research could provide a detailed analysis of certain specific and/or regional forest policies.

4. Historical context of the Finnish forestry model and policy coalitions

Two thirds of Finland's land area is covered by boreal forests, and 91% of this productive forestland is in commercial use ([Finnish Statistical Yearbook of Forestry, 2014](#): 35). Finland has been called the 'forest nation' of Europe since both its economy and culture have been closely linked to forests more than any other country in Europe, during the past 150 years ([Reunala, 1999](#): 230; [Donner-Amnell, 2000](#) and [Donner-Amnell, 2004](#)). Consequently, the forest sector has been a powerful player in both Finnish economic policy and society ([Koskinen, 1985](#)). The economic importance of the sector had decreased during the past decades both in relative and absolute terms, nonetheless, the forest industry accounted for 20% of the exported goods and around 4% of the GNP in 2012 ([Finnish Statistical Yearbook of Forestry, 2014](#): 322, 353). The forest sector as a whole provides employment for 160,000 people. Finland is the third largest exporter of paper and paperboard in the world ([Finnish Statistical Yearbook of Forestry, 2014](#):382). Recent investments into tree-based "bioproduct mills" suggest that industrial forestry is making a comeback in Finland after a decline during the late 1990s and 2000s ([Kröger, 2016](#)).

A majority of the productive forests, 61%, is owned by 685,000 private landholders (most of whom are families), while 24% is owned by the state and 9% by forest companies ([Finnish Statistical Yearbook of Forestry, 2014](#): 35). Forests are accessible to citizens irrespective of ownership through the right of public access, and forests are said to represent the Finnish version of public space, which in most other Western countries is found in urban environments ([Eräsaari, 2002](#): 52). However, access to forests does not equate to access to decision-making, and two rather different entities, identified as "elite groups", have usually most influenced decision-making ([Sarkki and Rönkä, 2012](#) and [Kotilainen and Rytteri, 2011](#)): the forest industry cluster, which includes international giants such as Stora Enso and UPM, and the large, heterogeneous group of private forest owners who provide the industry with 80% of its domestic raw material ([Finnish Statistical Yearbook of Forestry, 2014](#)).

The large extent of family forest ownership has contributed to its social acceptability and to the success of the Finnish, or Nordic, model, as forest owners have gained income from commercial forestry ([Donner-Amnell, 2004](#)). Companies were not allowed to purchase land during a period starting in 1925 ([Donner-](#)

[Amnell, 2004](#): 182),² legislation that was meant to provide socio-political security through the distribution of economic gains, which was achieved primarily by the mobilisation of newly-formed small- and medium-sized forest owners' cooperatives ([Kuisma, 1997](#) and [Kuisma, 1999](#): 16). This legislation also helped secure high harvest prices on a global level ([Kröger, 2013b](#)).

However, forest ownership did not necessarily translate into full control over the use of the forest. The farmers had to accept that professional foresters would have significant control over forest management in the form of detailed regulation, public funding, and management planning, as the goal of the state and industry was to secure a constant and sufficient flow of raw material from private plots to industry ([Kotilainen and Rytteri, 2011](#) and [Donner-Amnell, 2004](#)).

As a result of the mentioned political and economic relations, Finnish forest policies have traditionally been based on joint agreements between the state, the forest industry (represented by the Finnish Forest Industries Federation), and the Central Union of Agricultural Producers and Forest Owners (MTK), an organisation of private forest owners ([Ollonqvist, 2002](#)). This “social corporatism” was the hallmark of Nordic capitalism until the early 1990s ([Pekkarinen et al., 1992](#)). The forest owners and producers continue to, via MTK, exert power on policy-making, which suggests that the tradition of social corporatism has not eroded as much in forestry as in other sectors following the start of the neoliberal era in the 1990s (see [Patomäki, 2007](#)).³

The creation of a world-class forest industry has been the cornerstone of the Finnish national economic strategy since the end of the Second World War ([Donner-Amnell, 2000](#): 8–9; [Kotilainen and Rytteri, 2011](#)). National forest programs have been drafted since the 1950s. The total tree-growth in Finland has increased from under 60 million cubic meters annually in the 1970s to over 100 million cubic meters in 2014 ([Finnish Statistical Yearbook of Forestry, 2014](#): 46). Policy measures that aimed at increasing timber production have resulted in a landscape that is more uniform than what the diverse ownership structure would imply, and forestry has become the most significant cause of habitat and species diversity loss in Finland (see e.g. [Pykälä, 2007](#) and [Rassi et al., 2010](#)).

The negative impacts of intensive forestry on biodiversity and non-timber forest uses, for example recreation, indigenous Sámi reindeer husbandry, and tourism, have caused increasing criticism since the 1970s. Since then, a number of “forest wars” ([Hellström, 2001](#)) waged by environmental non-governmental organisations (ENGOS) and indigenous Sámi reindeer herders have challenged the forestry status quo through shadow reports that identify forests with high conservation values, direct action, consumer campaigns that target customers of the Finnish paper industry in Central Europe, as well as appeals to multilateral organisations (e.g. [Lawrence, 2007](#), [Raitio, 2008](#), [Raitio, 2013](#), [Sarkki and Heikkinen, 2010](#) and [Sarkki and Heikkinen, 2015](#)). These actors have called for increased levels of forest protection, particularly in state-owned forests, as well as more environmental considerations within forestry, and have slowly managed to gain some influence ([Huttunen, 2014](#) and [Valkeapää and Karppinen, 2013](#)).

In 1993, the Ministry of Agriculture and Forestry published the first environmental guidelines for forestry and acknowledged that many severe mistakes had been made, several of which the conservation movement had highlighted earlier ([Viitala, 2003](#): 106–107).⁴ A new Forest Act (1093/1996), effective on both private and state land, was drafted based on the guidelines. Its goal was to “*promote economically, ecologically and socially sustainable management and utilisation of forests in order that the forests produce a good output in a sustainable way while their biological diversity is being maintained*” (1 §).

The act presented three pillars of sustainability, which were officially recognized as the foundations of sustainable forest management in 1993. On the discursive level, this represented an important shift in industrial forestry discourse ([Arts et al., 2010](#)), which previously considered sustained yield to be sustainable forest management. The reform was followed by several protection programs for state-owned

forests in Northern Finland ([Raitio, 2008](#)), which were extended to private forests in Southern Finland during the 2000s through the METSO-program (see below).

[Donner-Amnell \(2000: 11\)](#) argues, however, that despite the environmentally-oriented changes in how policies were framed, the dominant pathway did not sincerely incorporate the three dimensions of sustainability, but rather continued to rely on a productivist logic. Finland was e.g. not a forerunner in international negotiations on environmental agreements such as climate issues in the fear that their participation would have adverse impacts on the competitiveness of the forest industry ([Donner-Amnell, 2000](#)).

The different advocacy coalitions have remained distinct to this day, and their relations continue to be polarized ([Rantala and Primmer, 2003](#) and [Harrinkari et al., 2016](#)). The Environmental coalition frames intensive forestry and its negative impacts on forest biodiversity as the main sustainability challenge, whereas the Forestry coalition is focused on, as before, framing as the key challenge the attracting of industrial and productive investments to Finland, while considering environmental issues. [Harrinkari et al. \(2016: 34\)](#) provide one of the most recent analyses on the stakeholder coalitions in Finnish forest policy-making, and it is helpful to build on their findings. They argue that the Forestry coalition wants a consensus, but one that would “recognize the significance of the forest related businesses for the whole nation and help to legitimise the economic exploitation of forests”.

[Harrinkari et al. \(2016\)](#) also found that the coalitions disagree on the process for defining forest policy goals; the Forestry coalition wants landholders and the industry to maintain decision-making authority over forest policies, whereas the Environmental coalition calls for all actors to have an equal chance to participate in and influence decisions. In between these coalitions is an “Administrative coalition” that sees the fulfilment of different forest-related goals as the main sustainability challenge in forestry, and maintains that opinions from outside “the sector” are also welcome ([Harrinkari et al., 2016](#)). In the next section, we analyse how the forestry administration incorporated the different goals of various coalitions in forest policy during the 2010s.

5. The dominant pathway to sustainability

5.1. Key policy challenge and goal: saving the Finnish forest sector

The National Forest Programme (NFP), Government Review, and Forest Strategy (see [Table 2](#)) all shared a frame that emphasises the challenges related to the competitiveness of the Finnish forest sector in an international market setting, which was framed as increasingly demanding. When the NFP was launched, the Ministry of Agriculture and Forestry framed the challenge explicitly as “*How to save the Finnish forest sector?*” This also became the title of a promotional film about the NFP. ⁵

As noted in [Section 4](#), the overall goal of long-term Finnish forest policy has been the maintenance of forest productivity for economic returns that can support the Finnish economy and welfare system. However, the downsizing of production capacity in the late 2000s threatened this objective. This caused the dominant frame to shift towards a new objective: capitalisation of the opportunity presented by the global bioeconomy era. This new framing is reflected in NFP's vision for the Finnish forest sector: “a responsible forerunner in bioeconomy”, with competitive and profitable forest-based livelihoods and improved biodiversity and other environmental benefits ([Anon, 2010: 10](#)).

Three broad goals to make the vision true were identified in the NFP: (1) strengthen forest-based businesses and increase their added-value; (2) improve the profitability of forestry; and (3) strengthen forest biodiversity, as well as other environmental and social benefits that forests provide ([Anon, 2010: 11](#)).

Each of these goals included a set of sub-goals and strategies to assist in achieving the goals ([Anon, 2010](#): 15–31).

However, soon after endorsing the NFP, the government wanted to make a more long-term assessment of the global changes and their implications. The Government Review (hereafter in short the Review) was drafted as a specific response to increasing global challenges for Finnish forestry, including climate change; population growth and urbanisation; globalisation and new technologies; resource depletion; and structural changes in the global economy ([Anon, 2014](#): 22–25). The Review argued that the forest sector has always been able to adapt to changes, and that the impacts of the contemporary challenges depended on the ability of the forest sector to “*adapt to and effectively utilise*” (ibid: 21) this situation. Overall, the identified global and national challenges were not formulated using the vocabulary of sustainable development or sustainability challenges. Instead, they were identified as drivers that the sector and policy need to prepare themselves for, in order to maintain and expand its role as a provider of welfare and prosperity for the Finnish society (ibid: 21–38). To this end, the Review identified five core areas of development (ibid: 3):

- 1.The creation of preconditions for reforming existing businesses within ‘the sector’ and for the establishment of new, growing businesses through economic policy decisions and legislative reforms.
- 2.The creation of preconditions for [small-scale, private] forest ownership that is active and business-minded; tax reforms and changes in the ownership structure were identified as central tools for this point.
- 3.The securing of [industry's] access to raw material in accordance with [its] needs and changes in the structure of the wood markets.
- 4.The targeting of publicly funded R&D funding towards the reform and transition of the sector towards bioeconomy.
- 5.The improvement of forest biodiversity, ecosystem services, as well as the ecological and social sustainability of forests. ([Anon, 2014](#): 3.)

The review was then operationalised in a National Forest Strategy, which outlined 28 goals under seven themes ([Anon, 2015](#): 7, 16–29):

- 1.Forest sector grows, enterprises and business are renewed and new and growth enterprises are developed
- 2.Supply of raw materials allows for increased use of forests and new investments
- 3.EU and international forest policy promote sustainable use, acceptability and competitiveness of forests and wood
- 4.Know-how on forest-based business and activities is diverse and responds to changing needs
- 5.Administration is flexible, effective and customer-oriented
- 6.Forestry is active and businesslike
- 7.Forest biodiversity and ecological and social sustainability are reinforced

The dominant frame in all of the three policy documents is that future challenges can be addressed by getting “*more of everything*” from forests (as in Sweden, see [Beland Lindahl and Westholm, 2011](#)). How this relates to achieving sustainability – and what is meant by sustainability - is explained by the Ministry of Agriculture and Forestry in the promotional film for the NFP. In the film, a representative for the Ministry of Agriculture and Forestry states that the NFP balances the different dimensions of sustainability because the

annual timber harvest would not exceed the annual timber volume growth (sustained harvest). In addition, growing forests would act as carbon sinks. Biodiversity concerns would be addressed through plans for improving the forest management methods and extending the METSO protection program for Southern Finland to an additional 96,000 ha of private forests over the period 2014–2025.⁶ Overall, the “more of everything” approach assumes that ecological and social sustainability goals can be achieved while the utilisation of timber resources also increases. In this view, a transition towards bioeconomy is expected to contribute positively to the ecological sustainability of the forest sector through the replacement of fossil fuels and non-renewable products with tree-based products.

At the same time, the major ecological sustainability issues are only addressed as the last point in each list. Their low prioritisation reflects the need to increase the amount of wood entering markets, which is connected to a goal of *diversifying forest management methods* ([Anon, 2015](#): 25–29). This goal is not primarily concerned with diversifying forests as natural environments or places for recreation, although this, from the perspective of the Governmental Forest Policy Review, would be a positive externality from the diversification of forest management methods. Similarly, there is an emphasis on *active forest management and investments* ([Anon, 2015](#): 25–26) rather than active decisions *not* to manage forests to maintain or increase the recreational or biodiversity benefits.

The key strategies for capitalising on the bioeconomy opportunity are instead framed as the *promotion of business-mindedness* in landholders and the *increased commodification* of different forest services ([Anon, 2015](#): 21–23, 25–26). This commodification is also assumed to improve the non-material welfare and ecosystem services of forests (ibid: 26). The documents are thus based on the assumption that no fundamental goal conflicts exist and there is no need to explicitly discuss the trade-offs between different goals. However, there are clear tensions between policy goals, which we analyse next.

5.2. Tensions and goal conflicts

5.2.1. Fibre users versus other forest-based industries

One of the biggest tensions between different goals can be seen as arising from the increasing use of trees for industrial purposes and alternative forest uses, even though no such tension is mentioned in the policies (e.g. natural forests are not distinguished from tree plantations). Although it has been argued that ‘the forest sector’ should be interpreted in broad terms, as opposed to the conventional focus on pulp, paper and lumber, in a majority of the identified action points ‘companies within the sector’ referred to those companies utilising wood fibre in one way or another (e.g. [Anon, 2010](#): 17–20; [Anon, 2015](#) tables on p. 17, 19, 25). The business areas that utilise non-timber forest products such as tourism and recreation are mentioned either in separate sections at the end of the lists outlining the goals ([Anon, 2010](#): 17–20; [Anon, 2014](#):9; [Anon, 2015](#): 17) or hardly at all, as in the case of reindeer husbandry, food, and cosmetic industries using forest berries ([Anon, 2014](#): 10; [Anon, 2015](#): 24). The possible goal conflicts between non-timber forest uses and the outspoken goal to increase timber production are not discussed despite the earlier conflicts between timber production on one side, and tourism and reindeer herding on the other (e.g. [Lawrence, 2007](#), [Saarikoski and Raitio, 2013](#) and [Sarkki and Heikkinen, 2010](#)).

5.2.2. Productivism versus ecological sustainability

Another key goal conflict that can be identified from the Finnish forest policy documents through the Pathways to Sustainability-approach concerns the relationship between productivism and ecological sustainability. Overall, the ecological sustainability challenges are given relatively little attention in the Review and the Strategy, whereas the NFP contains a dozen different action points related to improving ecological sustainability. “Planetary boundaries” are mentioned in the Review with the note that “*we are about to exceed some of them*” ([Anon, 2014](#): 23). Climate change is described as a fact and an escalating

phenomenon “*unless steps are taken fast*” ([Anon, 2014](#): 24), but in the Review's vision such steps – or climate change mitigation in general - do not play a specific role. Rather, it is stated on a general level that the transition to bioeconomy will be positive from a climate perspective in the same way, as the diversification of forest management methods, driven primarily by timber production concerns, will also contribute to ecological benefits. This approach reflects an eco-modernistic discourse ([Dryzek, 2005](#); [Langhelle, 2000](#)) with reference to “*resource-efficient new technologies*” as a key solution. However, greater access to, and increased use of, trees may also negatively affect biodiversity and intergenerational justice, as recent studies on the impact of wood-based energy on biodiversity suggest ([Kröger, 2016](#), see [6.3](#) and [7.3](#)). Recent research on the relation of increased harvests to climate change (e.g. by [Soimakallio et al., 2016](#)) have furthermore found that “wood harvesting reduces forest carbon sink” for which reason large emission reductions are “exceptionally unlikely” under Finland's new forest policies. In spite of such findings, the most recent forest policy outlines of the government have endorsed productivism as a general pathway to sustainability:² This is a clear contradiction, which our analysis on policy-making processes below will help in explaining.

5.2.3. Neoliberal cuts and streamlining versus participatory rights

The new policies also cause tension due to typical neoliberal reforms that seek to diminish the influence that state bureaucrats have. The policies have caused established state administrators to experience a decrease in their role and influence (see [Section 6](#)). This power manoeuvre took place after the Review framed a need to *streamline the public administration* ([Anon, 2014](#): 12–13). The Review highlights the need to create a “*lighter*”, more cost-effective, and “*customer-friendly*” administration ([Anon, 2015](#): 24) in line with new public management (NPM). This applies both to the administration overseeing private forests as well as the agency managing publicly owned forests, the Forest and Park Service (for more on NPM and the governance of public forests, see [Raitio and Harkki, 2014](#)). Another central goal is the removal of obstacles for investment in land use planning. Today's permit processes are perceived as a hindrance to development ([Anon, 2014](#): 10–11) – a view that is in contrast to the general perception of environmental planning and permit procedures as central tools for enhancing sustainable development both in terms of the substantive outcomes, and in terms of acting as conflict management mechanisms between competing policy goals by allowing the public to participate in such processes (e.g. [Kyllönen et al., 2006](#) and [WCED \(World Commission on Environment and Development\), 1987](#)). From the neoliberal perspective, such conflict management mechanisms are unnecessary, perceived as an overt bureaucratic delay to investors.

Having analysed the policy and framing “inputs”, we will next focus at the “outputs”, analysing by the case of the reform of the Forest Act in 2011–2013 how the implementation of the policies took place, given the strong goal contradictions that would suggest a rather cumbersome implementation process.

6. Implementing the “more of everything” pathway: reforming the Forest Act

6.1. Goal implementation

The Forest Act needed to be reformed for the updated forest policy to be successfully implemented. This reform process was opened to address many of the central challenges and goals identified in both the NFP and the Government Review. Both of these official policies highlighted that forest owners should be encouraged to “*actively manage*” their forests and to increase the profitability of forestry, and that guidelines were necessary for the implementation of these goals ([Anon, 2014](#):13; [Anon, 2015](#): 21–23, 25–26). The Forest Act reform also aimed at “*significant positive impacts*” on forest biodiversity of large areas ([Anon, 2012](#):5). Forest management methods should be diversified and forest owners should have more freedom and responsibility ([Anon, 2012](#): 9), because, in the past decades, forest owners and citizens in general had begun to place more emphasis on recreational and ecological values ([Valkeapää and Karppinen, 2013](#)).

These multiple, but conflicting goals of the NFP implementation strategy capture the “more of everything” frame. The Forest Act reform provides a fruitful case to study how this frame was, and was not, implemented as a pathway to sustainability, as well as which components of the pathway actually became dominant via the implementation process.

The reform began when a multi-stakeholder working group chaired by the Ministry of Agriculture and Forestry drafted a legislative bill. The group was called *Working Group for the Diversification of Forest Management Methods* ([Anon, 2012](#)) and its task was to use the information from an earlier report to suggest steps for the revision of the Forest Act.

This working group proposed the deregulation of forest management as the main change to the existing Forest Act ([Anon, 2012](#): 5–9). Forest owners would be able to choose when to harvest trees (previously there were minimum age and diameter limits for final felling) and what tree species to use when regenerating the forest. They could also choose to apply selective logging instead of thinning and final felling. Forest owners were no longer required to replant trees at poorly productive peatlands, as had previously been the case. Furthermore, three new categories of key biotopes were added to the list of important habitats that need to be considered in forestry.

Many of these measures proposed by the multi-stakeholder group exemplify a departure from strong state regulation of forests towards market-driven regulation mechanisms. On the other hand, reducing state influence can also be seen as a step towards strengthening the role of the landholders in defining their sustainability goals. Landholders would have an increasingly important role in implementing this new, neoliberal style policy. The environmental groups participating in the working group were in principle positive towards the de-regulation of logging methods, as this was expected to lead to more diversity in forest management approaches (Anonymous, 12: 40–51).

6.2. Divide between the key coalitions

Despite the overall agreement on the need to revise the Forest Act and to diversify forest management methods, the working group was not unanimous in its proposal. The proposal meant that conservation requirements would be weakened in the new act – despite the stated goal to the opposite ([Anon, 2012](#):5). This led to all the three representatives of the Environmental coalition to withdraw its support to the proposition and to submit dissenting opinions, which were attached to the report ([Anon, 2012](#): 38–51). The fact that WWF Finland and the Finnish Association for Nature Conservation were not satisfied was not unusual for a forest policy process in Finland. The third dissenting opinion was more exceptional, as it came from the Ministry of Environment ([Anon, 2012](#): 38–40), openly exposing conflict and power struggle within the government.

All three actors argued that contrary to the goals of the reform, biodiversity conservation would not be improved ([Anon, 2012](#): 38–51). Instead, the reform would undermine biodiversity conservation, as it was suggested that the definition of key biotopes would become more narrow, protecting only areas that would “*always be small*” (< 0.5 ha) and “*of lesser importance to timber production*” (proposed new formulation of Forest Act 11§, [Anon, 2012](#): 25). In this way, larger high conservation areas or areas that are also of importance to timber production would not be covered by the regulation. Furthermore, forest owners would be allowed to carry out relatively unregulated forest management activities within these small conserved areas as long as “*conservation values were maintained*” (proposed new formulation of Forest Act 12§, [Anon, 2012](#): 26), which was too vague of a formulation according to the dissenting opinions. The Ministry of the Environment requested that the proposal be subjected to an external environmental impact assessment, to be followed by an extensive hearing process ([Anon, 2012](#): 38–40).

This clear-cut divide between the coalitions and within the government suggests that the prior consensus-driven decision-making mechanism was not implemented, and the group of decision-makers became more limited: there were no trade-offs to be offered for the dissenting opinions to be joined to the consensus, as in the prior policy-drafting rounds. This divide between the coalitions and the way this disagreement was addressed allow analysing next the mechanisms of compromise-making in Finnish forest politics, and how they have changed.

6.3. A change in expert decision-making

Following the request from the Ministry of the Environment, the Ministry of Agriculture and Forestry commissioned an official evaluation of the impacts of the bill. The evaluation was carried out by the Forestry Development Centre (Tapio), Finnish Forest research Institute (Metla, later merged into Natural Resources Finland), and Finnish Environment Institute (Syke). Their report was unanimous, openly critical of the reform, and supportive of the dissenting opinions submitted by the environmental actors ([Kostamo et al., 2012](#) and [Valkonen, 2013](#)). It stated that the deregulation of forest management would have little practical impact on the profitability of forestry for the owners, for the timber supply of the industry, or the national economy at large. While the new bill would have some minor positive impacts on biodiversity (new categories of key biotopes, selective logging allowed, peatlands not regenerated), these would be superseded by the negative impacts caused by the weakened status of key biotopes. The negative impacts also included a lack of attention and regulation regarding wood extraction for bio-energy production, which was already known to adversely affect the environment. The evaluation further highlighted the lack of attention on climate change mitigation and adaptation ([Kostamo et al., 2012](#) and [Valkonen, 2013](#)). The evaluation report concluded:

“As a whole, when compared with the current legislation, the proposed bill will weaken the possibilities to protect biodiversity and Finland's possibilities to live up to its international commitments in this regard” ([Kostamo et al., 2012](#): 9, translation by the authors).

The Ministry of Agriculture and Forestry was “*shocked*” and “*disappointed*” at the evaluation, and claimed that it was based on mistakes, misunderstandings, and opinions ([Valkonen, 2013](#)). Both the report and the Ministry's response became part of a growing public debate about the role of scientific knowledge in the policymaking of the Ministry of Agriculture and Forestry. However, the evaluation led to very few changes in the formulation of the Act, which came into force in the beginning of 2014.

This process suggests that the old expert organisations, such as Tapio, Metla, and Syke, have less of an impact in the current forest and environmental governance setting. The power dynamics suggests that the pathway that emerged as dominant is based less on science, (self-) criticism, or autonomous state bureaucracies, and more on governmental decision-making that is strongly aligned with the wishes of industry, landholders, and the Ministry of Agriculture and Forestry. The pathway that emerged is largely productivist, although it is still framed as a “more of everything” pathway; this framing is sustained by silencing the tensions and policy conflicts together with the help of new powerful, global meta-discourses, such as “bioeconomy”, whose role in recent policy changes will be discussed next.

7. Discussion

Following our assessment protocol (see [Table 1](#)), this discussion section seeks to contextualise the national level analysis within the global setting, looking at the Finnish case particularly from the perspective of the rising global era of bioeconomy. While focusing on summarizing and discussing the findings, we make notes on how the global meta-discourse of bioeconomy has influenced sustainability framing and policy-making in the important national context of Finnish forest policy. We also comment on recent shifts in

implementing the more of everything pathway that further explain our results in that environmental goals have secondary status within the more of everything pathway during the bioeconomy era.

7.1. The Finnish pathway to sustainability and the bioeconomy discourse

The picture of the dominant pathway to sustainability in current Finnish forest policy initially seems somewhat confusing in relation to challenges concerning the ecological dimension of sustainability. On the one hand, population growth, climate change, depletion of resources, and a biodiversity crisis are identified as global challenges affecting Finnish forest policy and substantial changes in production and consumption patterns are highlighted as necessary if sustainability is to be achieved. The shift in public values towards conservation also points in the same direction.

On the other hand, the policy goals and implementation of the Forest Act are almost exclusively focused on addressing another set of challenges that relate to issues that have traditionally been at the core of Finnish forest policy: the competitiveness of the Finnish forest industry and the structural changes to the Finnish economy that will provide steady economic growth. In the policies, ecological sustainability and other forms of forest uses are simply added to the end of lists that reflect the “more of everything” frame. In this way, biodiversity and other environmental issues, although mentioned, clearly stand in a secondary position in the implementation of the policies, and this hierarchy of goals has become more evident after 2010. The dominant sustainability pathway is in many respects a reflection of the past, when the primary focus was to establish a large-scale forest industry. In this frame, it is the forestry industry - rather than ecological sustainability or Finnish forests - that is to be sustained. The official policies frame the industry as the key actor that the government must help adapt to new global setting and challenges.

Our findings indicate a continued dominance of the Forestry coalition's frame over the Environmental coalition's frame. Instead of diversifying forest management methods and forest-based livelihoods, the current neoliberal deregulation promoted by the policies seeks an increased flow of wood to the industry, and a lesser checking or regulation of this process by autonomous state bureaucrats, experts, research institutions, or citizens. The increased tree usage is framed as a key step in sustaining the Finnish forest sector - an act that, in itself, is framed as the most responsible pathway to sustainability by the current decision-makers. In short, the contemporary situation echoes the observations of [Donner-Amnell \(2000\)](#) from the 1990s, namely that productivism rather than a genuine balance-seeking between the three dimensions of sustainability characterises Finnish forest policy.

One of the explanations for a continuation of this state of affairs could be the strengthening of the productivist stance via the new global metadiscourse of “bioeconomy”. It draws on the global discourse of limits to growth, picturing a doomed future and offering technical arguments (typical to ecological modernisation discourse) and economic arguments (neoliberal discourse) as solutions. [Pülzl et al. \(2014: 391\)](#) argue that this is in fact a way to reframe the industrial forestry discourse of the 1960s, that is, to bring productivism back to the fore: *“bioeconomy is supposed to support sustainable development as an aim, but economic aspects are clearly dominant”*. The bioeconomy discourse, by focusing on technical solutions and economic arguments, has affected the opportunity structures of different policy coalitions involved in Finnish forest policy and may thus have real sustainability impacts, which should be studied more in detail.

7.2. Marginalisation of expertise and critics

The recent policy reform processes and their outcomes also illustrate how contemporary Finnish forest policy addresses (and does not take into consideration) disagreements. Conflicts can be openly expressed, but some of the differing opinions will simply be ignored. The protection of timber production and supply to the industry remain the key concerns of the Ministry of Agriculture and Forestry, and when there is a

conflict with the goals of other ministries within the government, the Ministry of Agriculture and Forestry still protects its interests. It is noteworthy that in the analysis of different forest policy coalitions [Harrinkari et al. \(2016\)](#) made during the Forest Act reform, the Ministry of Environment's views align as part of the Environmental Coalition, whereas the Ministry of Forestry and Agriculture formed the core of the Administrative Coalition, which is considered to be more aligned with the Forestry Coalition than the Environmental coalition. There is thus a divide within the government in terms of how the pathway to sustainability is framed.

Interestingly, our results show that the social corporatist model, in which the industry, government, labour, and forest producers and owners are the most powerful actors, has been retained, in spite of the generally rising neoliberalism that has weakened the state's autonomous regulatory capacities. At the same time, the Forest Act implementation process that we studied suggests that the Environmental coalition has not been integrated into the social corporatist model to the extent that could have been expected after more than two decades of environmental reforms in the Finnish forest policy. The government has argued that all the key actors and different dimensions of sustainability have been successfully balanced in the National Forest Program, yet the most important demands of the Environmental coalition as well as biodiversity or non-timber forest product experts were ignored during the Forest Act reform. The role of the environmental administration and experts in the formulation of forest policies seems thus to have decreased instead. The way Forest Minister Koskinen ignored the governmental research institutions' criticism of the new Forest Act suggests that state bureaucracies currently have less autonomous power and/or powerholders have less need to consider the opinions of others in the current power structure. A large number of government-funded entities that used to be sources of constructive criticism have been either dismantled or transformed into units controlled by the government.

These changes have neglected to address the sustainability challenge and policy conflicts between bioeconomy and sustainability. This is surprising considering that the Administrative Coalition's (i.e. Ministry of Forestry and Agriculture) objective is that all parties can participate in forest politics to resolve major sustainability challenges that concern the difficulties of combining different aspects of forest use ([Harrinkari et al., 2016](#)). The outcome of the processes studied in this paper implies that either this was not the genuine ambition of the ministry, or that the Forest Coalition has dominated the entire decision-making process since 2011.

7.3. Looking forward: more bioeconomy, less sustainability?

Recent changes since 2015 further corroborate our findings, but also raise questions about whether the goal still is to have more of "everything". The new Centre-Party led government of 2015 (including also the right-wing National Coalition and the Finns party) has promoted the pathway we have outlined in this article.

The new government has identified the top two forest policy priorities to (1) increase the multiple-ness of wood-use, increase harvests by 15 million cubic metres per year, and increase the added-value; and (2) to augment the size of forest estate, the goal being an entrepreneurial-like forest economy with intensive forest management.⁸ Simultaneously with these productivistic and business-minded priorities, the government announced it would radically cut (60–70%) the funding of the METSO forest protection program. This led to a joint appeal by actors across the coalition divide for the government to repeal the budget cuts, but to no avail ([Anon, 2016](#)). The new government also disrupted the Southern Finland peatland conservation policy that was the result of arduous work and many years of studies. Although this policy would not have cost much, it was essential for the biodiversity of the forest-peatland landscapes. A third example of the same development is how the Ministry of Environment and the Ministry of Agriculture and Forestry were organised under one minister instead of each with their own, marking a break-up from

the three decades long history of independent ministers of environment in Finland. Furthermore, the revision of an Act on Forest and Park Service (HE 132/2015 vp), decreased the authority of the conservation authority (Park Service) over state-owned lands and turned the Forest Service into a business corporation.

The new government and the forest industry have also eagerly tried to find ways to implement a more business-oriented forestry model, where ownership would be consolidated and transferred increasingly to companies. For example, the Finnish Forest Industries Federation has pushed for a new tax system in which all forest owners would pay taxes for the sale of their wood at the beginning of each year, before they have made the decision to sell or not; they would then get the paid sum back at the end of the year if they did not sell.⁹ However, given the current recession and rising unemployment and foreclosures of farms in Finland, such a policy could mean that many forest owners would have to sell beforehand just to be able to pay the tax.

Both the bioeconomy focus, the announced increases in harvest level goals and the decreased investments in biodiversity conservation have received heavy criticism from leading Finnish forest ecologists and forest economists, who have highlighted the failure to follow scientific research and address climate and biodiversity threats seriously (e.g. [Rämö, 2016](#), [Toivonen, 2016](#) and [Soimakallio et al., 2016](#)).¹⁰ Likewise, the revision of the Act on Forest and Park Service caused massive protests and a petition was signed by 130,000 people in less than a month; the protest movement also appealed to the president to use his veto over the parliamentary approval of the law, but to no avail ([Katila, 2016](#)). The critical voices of citizens and researchers continue, in other words, to be ignored.

With these developments in mind, further research is needed to determine whether the “more of everything” pathway has in fact begun to transform into a new pathway, one based exclusively on a “productivist-bioeconomy” approach.

8. Conclusions

This article has discussed the present state of forest policy-making in Finland based on a review of key policy documents issued between 2010 and 2015 and an analysis of the processes that have led to their implementation during the revision of the Forest Act. We found that the Finnish forest policy has been framed as “more of everything” pathway; however its implementation has been more productivist and less deliberative than the frame would imply. There were important goal contradictions in the key strategy outlines and policy drafts, which were not resolved during the policy implementation process, but led to a breaking of the existing consensus and actor-balance: the new power structure reflecting the hierarchy of policy goals. The Finnish case illustrates how the seemingly democratic and traditional, expertise-based policy-drafting processes between 2010 and 2015 were abruptly transformed into a hierarchical process that favoured productivism over both environmental and social goals, resulting in the current forest policy that is aligned with a global “bioeconomy-productivism” discourse. Although the change has been marked, we notice that the current situation is still classifiable as a variation within the “more of everything” pathway – but this might be changing.

It has been debated whether the bioeconomy meta-discourse supports finding new solutions in forest policy ([Pülzl et al., 2014](#)). Our analysis suggests that the dominant pathway to sustainability in Finnish forestry draws heavily on the global bioeconomy meta-discourse to legitimise approaches that are not so much new solutions as old solutions to new problems. The government has started to frame the wood-based bio-economy as *the* key for Finland to tackle the climate change.¹¹ It is possible that without the bioeconomy discourse, which at the surface carries a promise of sustainability, it would have been more difficult for the current Finnish government to push through a markedly capitalist forest policy,¹² considering the general public shift towards conservation-aligned policies ([Valkeapää and Karppinen, 2013](#)).

The increased multiple-ness and flexible-ness in tree usage, reflected by a shift to “flex” trees, has the potential to strengthen the power of bioeconomy-productivism through both new legitimisation strategies and sustained profit streams, as the range of tree-based products continues to diversify (Kröger, 2016). This change, promulgated by flexing, is already occurring. Recent neoliberal reforms and hierarchization of decision-making power offer ways, through less regulation and the disregard for grounded criticisms, to prioritise harvest and the consolidation of forest property before biodiversity concerns. The transformation of Finland from a country of forests into a country of tree-based “bioeconomy” and its tree plantations will be a major topic of discussion in the coming years.

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FOOTNOTES:

2

There are currently no restrictions on corporate forestland ownership.

3 When Finland's social corporatism is compared, for example, to Brazil's state corporatism, which favors large corporations at the cost of smaller producers and has caused severe rural conflicts, it has been a successful conflict management strategy that has prevented the tensions between smallholders and the forest industry from erupting ([Kröger, 2013b](#)).

4 These examples illustrate how the application of the pathways to sustainability approach to policy-making could have suggested certain alternatives to prevent problems.

5 <https://www.youtube.com/watch?v=dN0DhSVN8AE> (accessed 1 November 2016).

6 METSO was radically downsized in 2015, see [Section 7.3](#).

7 For example the Government's National energy and climate strategy to 2030, published on 24 November 2016, foresees a dramatic increase in the use of wood-based biofuels (see http://tem.fi/en/article/-/asset_publisher/strategia-linjaa-energia-ja-ilmastotoimet-vuoteen-2030-ja-eteenpain). Although not analysed here, why this strategy was has been created can be partly explained by our analysis of prior policies and political processes.

8 The Centre Party, Ratkaisujen Suomi, 27 May 2015, <http://www.keskusta.fi/loader.aspx?id=c3374414-88d8-4b64-87a4-27faab2880c5>, page 22.

9 <http://www.maaseuduntulevaisuus.fi/puumarkkinoilla-tarvitaan-yhteisty%C3%B6t%C3%A4-1.117303>, accessed 28 November 2016.

10 Several recent global studies have shown that increased carbon in the atmosphere has provided a one-time boom for tree growth, and that the metabolism has now slowed down, for which reason current models assuming a continuous increase in tree growth are mistaken (e.g. [Brienen et al., 2015](#)). In addition, it has been argued that tree plantations are not “carbon sinks” or stores for various reasons, one of which is that the products quickly return to the atmosphere as carbon ([Kröger, 2016](#)), and this is the case also with Finland's wood-focused energy and climate strategy ([Soimakallio et al., 2016](#)).

11 http://tem.fi/en/article/-/asset_publisher/strategia-linjaa-energia-ja-ilmastotoimet-vuoteen-2030-ja-eteenpain (accessed 28 November 2016).

12 In brief, “capitalist forestry policy” implies a model of forestry that is based on a particular human ecology (knowledge and practice) and an unequal division of capital and power ([Kröger, 2014](#): 254).