Sveriges lantbruksuniversitet
Institutionen för skogens produkter, Uppsala

The Role of Forests in Swedish Media Responses to Climate Change - Frame analysis of media 1992-2010

Viveca Sjöstedt

Licentiate thesis

The Swedish University of Agricultural Sciences
Department of Forest Products, Uppsala

Uppsala 2013
ISSN: 1654-1383

Report No 22

Rapport nr 22

Sveriges lantbruksuniversitet
Institutionen för skogens produkter, Uppsala

The Role of Forests in Swedish Media Responses to Climate Change - Frame analysis of media 1992-2010

Viveca Sjöstedt

Licentiate thesis

The Swedish University of Agricultural Sciences Uppsala 2013
Department of Forest Products, Uppsala ISSN: 1654-1383
ISBN (pr.) 978-91-576-9188-0
ISSN (e): 978-91-576-9189-7

Report No 22 **Rapport nr 22**

Sammanfattning

Skogspolicies beror på hur skogen beskrivs i media. Media påverkar olika delar av policyprocessen, t.ex. formuleringen och implementeringen. Genom att utgå ifrån Habermas (2006) beskrivning av media som mobiliserande och grupperande av relevanta frågor, undersöks här uppfattningen om skogens förhållande till klimatförändringar i allmän och sektoriell media. Klimatpolicies kan förväntas påverka hur skogen används, eftersom att skog är en källa både för minskning av utsläpp och som en anpassningsåtgärd. Exakt vilken roll skogen kommer att spela beror på medias beskrivning av skog i förhållande till klimatförändringarna.

För att fånga beskrivningen av skog och klimat i media använder jag mig av två tolkningsanalyser (*frame analyses*) som ska fånga in s.k. förståelseramar (*frames*) kring skog. Först görs en kvantitativ analys som fokuserar på mobiliseringen i den allmänna debatten om skogs- och klimatfrågan och sedan en kvalitativ analys som ser på den kognitiva integrationen av den svenska bioenergipolicyn i jordbruks-, energi- och skogssektorn. Bioenergipolicyn analyseras då den betraktas som en del av den svenska klimatpolicyn och sektorerna valdes på grund av sina kopplingar till bioenergiproduktionen. Analyserna visar att uppfattningen om skog i förhållande till klimatförändringar skiljer sig åt; den kvantitativa analysen av allmän media som är inspirerad av Benford and Snow (2000) visar att skog uppfattas som offer för klimatförändringar och att den sammankopplade skogs- och klimatfrågan inte uppmanar till handling då ingen specifik aktör uppmanas ta ansvar för problemet. Skogens roll som offer utan tydlig hjälpare kan jämföras med den kvalitativa analysen av sektorsmedia (som utgår från Schön & Rein (1994)). Analysen visar att skogen främst betraktas som en ekonomisk möjlighet i samband med bioenergi, då de tre undersökta sektorerna stödjer en ökad bioenergianvändning.

Skillnaden i hur skogen uppfattas kan vara ett resultat av de olika typer av mediaformat som analyseras eller på grund av typen av fråga som skogen är kopplad till (klimatfrågan eller den specifika frågan om bioenergi). Stödet till klimatpolicies och betydelsen av de olika roller som skogen har i analyserna är svåra att jämföra eftersom att resultaten kommer från olika analyser, dock illustreras att skog betraktas både som en ekonomisk möjlighet och som natur i förhållande till klimatförändringar. Skillnaden i synen på skogen kräver därför processer för policyskapande som hanterar dessa konflikter mellan förståelseramar.

Abstract

Forest policy making depends on the perceptions of forests in the media. Media affects different parts of the policy process, *e.g.* the formulation and the implementation of policies. Departing from Habermas' description of media as mobilising and grouping relevant issues (2006) the thesis explores the perceptions of forests at the case of climate change in mass media and sectoral media. Climate change is one of the global challenges that are expected to affect forest use, as forests are connected to both mitigation and adaptation. To capture the perceptions of forests in the media, frame analysis is used in this thesis. Two analyses are carried out; first a quantitative analysis focusing on the mobilisation of the forest-climate nexus in mass media and second a qualitative analysis focusing on the cognitive integration of bioenergy policy in the agricultural, energy and forest sectors. The three sectors were chosen for their connections to the production of bioenergy. The policy on bioenergy is analysed as it is considered part of Swedish climate policy. The results show that forests in relation to climate change are perceived differently in the two analyses. The quantitative frame analysis of mass media inspired by Benford & Snow (2000) shows that forests are framed as a victim of climate change. This can be compared to the qualitative frame analysis á la Schön & Rein (1994) applied to the debate on bioenergy from forest products in sectoral media where bioenergy is framed primarily as an economic opportunity. The difference in how forests are framed can result from the media format or the issue as such (bioenergy or forest-climate change nexus). The support of climate policies and the strength of the different roles of forests in the analysis are difficult to compare as the results are obtained through different analyses. However, the results show that forests are perceived as an economic opportunity and as a part of nature. The diverging perceptions of forests in climate change require policy making processes that are able to handle these frame conflicts.

Keywords: Forest policy, media, frame analysis, bioenergy, policy integration, mobilisation.

Author's address: Viveca Sjöstedt, SLU, Department of Forest Products, P.O. Box 7008, 75002 Uppsala, Sweden.
E-mail: Viveca.Sjostedt@slu.se

Abbreviations

COP	Conference of the Parties
CPI	Climate Policy Integration
DN	Dagens Nyheter
EPI	Environmental Policy Integration
EU	European Union
IPCC	Intergovernmental Panel on Climate Change
NGO	Non-governmental Organisation
PAS	Political and Administrative System
PI	Policy Integration
REDD	Reduction of Emissions from Deforestation and Forest Degradation
SEPA	Swedish Environmental Protection Agency
UNCED	United Nations Conference on Environment and Development
UNFCCC	United Nations Framework Convention on Climate Change
US	United States

List of Publications

This thesis is based on the work contained in the following papers, referred to by Roman numerals in the text:

I Kleinschmit, D. & Sjöstedt, V. (2014). Between science and politics: Swedish newspaper reporting on forests in a changing climate. *Environmental Science & Policy* 35, 117-127.

II Sjöstedt, V. & Kleinschmit, D. (under review). Integration of bioenergy policy – a multi-sectoral frame analysis. Under review for *Environment and Planning C*.

Contents

1. Forests in a changing world

It is expected that a number of global changes will affect the future use of forests in Sweden. Beland Lindahl & Westholm (2010) have identified four global changes: changing energy systems, emerging international climate policies, changing governance systems and shifting land use systems.

Forests play an important part in climate policies, *e.g.* as carbon dioxide sinks (Söderberg & Eckerberg, 2012). The concern with reducing deforestation and increasing afforestation to minimise CO_2 emissions highlights the link between forests and global climate change. Materials from forests are also expected to provide an alternative to the use of fossil fuels (Eckerberg & Sandström, 2013).

Forests are thus targets of policies at multiple levels, concerned with climate and energy goals. EU Directive 2009/28/EC (European Parliament and the Council, 2009) on promoting of the use of energy from renewable sources is one example of how global changes have been institutionalised. In response to the EU Directive, current Swedish climate and energy targets aim for a 40 % reduction in greenhouse gas emissions, with at least 50 % of total energy consumption coming from renewable energy, 20 % more efficient energy use and 10 % renewable energy in the transport sector (Ministry of the Environment, 2013). Within Swedish climate policy, an important role is played by the production of bioenergy. Bioenergy is generally seen as "one of the key options to mitigate greenhouse gas emissions and substitute fossil fuels" (Faaij, 2006, p. 322). This is particularly true for Sweden which gets 63.5 % of its renewable energy from bioenergy. The dominant source of bioenergy is forest products which account for 90 % (Ministry of Enterprise, 2009). Consequently, a part of Swedish climate policy consists of a climate mitigation policy that promotes the use of bioenergy. This policy is particularly relevant for Swedish forest policy. This perception is shared by academics who describe a shift in forest usage from the twentieth century which was characterised by large-scale mass production of timber, pulp and paper (Lehtinen, Donner-Amnell, & Saether, 2004) to today's climate and energy-related issues (Beland Lindahl & Westholm, 2010).

Climate and energy policies are, among others, characterised as being cross-sectoral in that they affect different sectors concerned with land use. For example, bioenergy from forest products not only concerns the forest sector but the *agricultural* and *energy* sectors as well. A sector here is defined as a delimited area that combines actors through the economic, social and cultural contribution of a particular resource, *e.g.* forests (Gane, 2007). The

assumption made in this thesis is that perceptions vary depending on the resource uniting the sector. For this reason, scientific analysis should look beyond the traditional borders of sectoral policy areas to obtain a more holistic understanding of the role of forests in responding to these global challenges.

The way in which climate and energy-related issues are discussed in reference to forests varies greatly, depending on the arena in which the discussion is taking place and the actors discussing it. In this thesis, the focus will be on two different media debates, those in mass media and those in sectoral media, exploring the perceived role of forests in response to climate change. The difference between these two kinds of media can be illustrated by the format concept developed by Altheide & Snow (1979, p. 10): "how material is organized, the style in which it is presented, the focus or emphasis on particular characteristics of behavior, and the grammar of media communication. Format becomes a framework or a perspective that is used to present as well as interpret phenomena". The format differs between the mass media and the sectoral media. One distinction between them comes in which phase of the policy process is affected by the media. Media in general serves as an arena in which problems are defined and policy options are discussed and negotiated. Media debate can be assumed to have an impact on policies at different phases in the policy process. For instance, the mass media agenda in particular, helps set the policy agenda (McCombs, Shaw & Shaw, 1972; Benton & Frazier, 1976; Cook *et al.*, 1983; Walgrave, Soroka, & Nuytemans, 2007). In comparison, the influence of sectoral media on policies is related to policy implementation (Ball, 1976; Levitt, 1980; Sabatier & Mazmanian, 1980). Sectoral media can be expected to influence the transformation from policy output to policy outcome in the sector. Within both types of media formats, different actors contribute to the discussion on forests and guide it in a certain direction.

It has been acknowledged that there is a need to study the media representation of climate change in sectoral journals, also referred to as 'special-interest magazines' (Asplund, Hjerpe, & Wibeck, 2012, p. 3). Sectoral journals representing sectors such as agriculture, energy and forests, provide information about the anticipated response to climate policies. Sectoral journals are the formal representation of the discussion in a sector and can be expected to show the shared beliefs of actors in that particular sector. Studies on relationship marketing confirm that collaborative communication encourages and maintains relationships by learning, increases confidence and builds cooperation and trust (Paulraj, Ladi, &

Chen, 2008). For these reasons sector journals are important units of analyses.

Assuming that media discussions affect forest policy-making, the **aim** of this thesis is *to describe how forests are perceived in the media in response to debate on climate change and to discuss the policy implications of the perceptions*.

2. Climate change, bioenergy and forests in the media

Previous media studies have been conducted on climate change coverage in Sweden. The Swedish Environmental Protection Agency (SEPA) asked a consultancy firm[1] to map the debate on climate change in the media in Sweden (Westander, Henryson, & Lindberg, 2008). According to the report, the starting point for the debate on climate change came in late October/early November 2006. The authors describe the combination of extreme weather conditions, the release of the Stern report and the first part of the Swedish government's official report into climate and vulnerability (Ministry of the Environment, 2007) as being the triggers for the debate. The reporting of these events was then followed by a series on "climate shock" in the tabloid *Expressen* and the "climate threat" in the tabloid *Aftonbladet*, with the latter resulting in 300,000 readers pledging to reduce their own greenhouse gas emissions. Reporting peaked in 2007, with the main focus on the IPCC reports, the Nobel Peace Prize awarded to Al Gore and climate politics. Important observations were that politicians changed their opinions as the debate on climate change continued (Westander *et al.*, 2008, pp. 23–24) and that the media did not question politicians' broken promises if the promises would have been harmful to the climate (Westander *et al.*, 2008). The conclusions of the SEPA report are confirmed by Olausson (2009) who focused on the Swedish debate on climate change and how it was linked to the need for collective action. Articles in three Swedish newspapers published between 1 September 2004 and 6 September 2005 were analysed. Olausson (2009) found the media to be reluctant to portray uncertainties in scientific findings as this would weaken the demand for collective action. When analysing the Swedish debate on climate change Olausson uses frame analysis. Frame analysis helps make sense of actors multiple understandings (6, 2005).

Asplund *et al.* (2012) aimed to contribute with an analysis of more cases and an audience-specific media analysis of climate change, which had been encouraged by Moser (2010) and Whitmarsh and Lorenzoni (2010). Asplund *et al.* (2012) explore how two leading Swedish agricultural journals framed and covered the issue of climate change between 2000 and 2009 as they believed it would reveal how climate science and policy are "communicated to a group of actors pointed out as central for climate change mitigation and adaptation"(Asplund *et al.*, 2012, p. 198). The results of the study show that the number of articles published increased after 2006, one of the journals

[1] Westander Publicitet och Påverkan

peaked in its reporting in 2007 with a general increase in articles in the other since 2006. Few articles were published in the two agricultural journals between 2000 and 2006. *Agriculture's contribution to climate change*, *the impacts of climate change on agriculture* and *the ways in which climate politics affect agriculture* were the three main themes found in the analysed journals (Asplund *et al.*, 2012). The frame analysis showed that climate change was primarily debated in economic terms, either as opportunities or challenges for Swedish agriculture (Asplund *et al.*, 2012, p. 12).

As illustrated above, there have been several attempts to describe the debate on climate change in the media. Lyytimäki (2011) links the media debate to the policy dimension of climate change. He states that the cross-sectoral nature of climate change implies some difficulty for effective climate policies. The assumption made is that effective climate policies require an "overarching climate consciousness" in all sectors concerned (Lyytimäki, 2011), which can be referred to as mainstreaming or integration of climate policies.

However, not only integration is important for supporting the issue of climate change. There is also a need to consider mobilisation. Beck (2010, p. 282) states that: "Without a majority of very different groups of people who not only talk about but act and vote for the politics of climate change […] climate politics is doomed". Climate change is an abstract phenomenon that cannot be directly experienced, thus, mobilisation primarily relies on the media.

Most of the literature that exists on media debates about bioenergy focuses on bioenergy as a source of liquid biofuels, based on agricultural products. However, there is literature on bioenergy from forest products: Huttunen (2009) analyses bioenergy in two Finnish rural periodicals from 1980 to 2005. The results show four different periods of distinct discourses on bioenergy production in Finland: 1) pre-biofuel from 1980 to about 1986, 2) learning about biofuel from the late 1980s to about 1995, 3) wood chips from 1995 to 2000 and 4) bioenergy entrepreneurs from 2001 onwards (Huttunen, 2009, p. 246). The role of bioenergy in media has been explored from multiple theoretical perspectives. Skjølsvold (2012) explores the issue of bioenergy as a climate mitigation policy by comparing how "bioenergy is covered and communicated in the news media of Norway and Sweden, countries where the diffusion of this technology looks radically different"(Skjølsvold, 2012, p. 512). The "news media in the two countries ascribe diverging meaning to the technology, offering audiences clearly varied images of what bioenergy ''is''. In other words, the technology is

domesticated in different ways, suggesting that media coverage plays a role in systems of innovation and diffusion"(*ibid*.).

On a global level, (Wright & Reid, 2011, p. 1390) use a dataset comprised of New York Times articles between 1 January 2006 and 11 May 2008 to assess the "contested terrain of biofuels discourse as some media coverage frames biofuels as beneficial, while other reporting constructs and packages counterclaims intended to resist development and portray biofuels as problematic". They find that "the media constructed three distinct frames in their efforts to shape mass discourse: economic development, environment, and national security"(Wright & Reid, 2011, p. 1390). A similar analysis is carried out looking at the media debate on bioenergy in the Netherlands between 2000 and 2008. The results reveal that the structures underlying the question can be organised along two axes, each one representing "opposite socio-cognitive frames: 'techno-economic *vs.* social–ecological' and 'regional *vs.* global'"(Sengers, Raven, & Van Venrooij, 2010). So far, little research has focused explicitly on the media debate on bioenergy from forest products. Usually analyses are performed on a combination of multiple sources of bioenergy.

There are a few studies on the perception of the forests-climate change nexus in the media. This link has been analysed in studies of the media in Bangladesh (Sadath, Krott, & Schusser, 2013). Although forests play a crucial part in climate policies and are highly relevant in Sweden, research into the media debate on climate change in Sweden has so far not attempted to analyse the role of forests in the climate change media debate in Sweden. This thesis will fill this gap using frame analysis.

Frame analysis has proven useful in media studies concerning policies (*e.g.* Feindt & Kleinschmit, 2011; Kleinschmit & Krott, 2008). Frames can be used in particular to identify the potential for mobilisation of social movements (Feindt & Kleinschmit, 2011) but also to understand the level of (cognitive) policy integration in and across different sectors. This thesis conducts two frame analyses focusing on the statements on the forest-climate change nexus in the media, assuming that frames in the two different media formats indicate potential mobilisation and policy integration.

This thesis is undertaken using a two-step approach: first the more general mass media debate on the forest-climate change nexus will be analysed followed by a more focused analysis of the bioenergy debate in sectoral media. Figure 1 shows that bioenergy debate is understood as a specific part

of the debate on climate change and that forests are assumed to play a role in both debates.

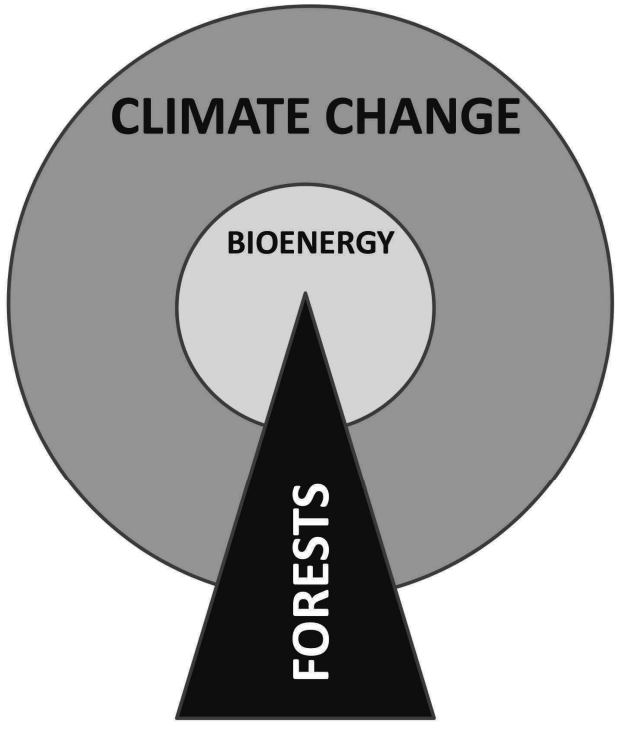

Figure 1. Climate change, bioenergy and the role of forests.

3. Theoretical point of departure

According to the philosopher (Habermas, 2006), the media can be regarded as an intermediary between civil society and political system. He expects the media to "ensure the formation of a plurality of considered public opinion" by mobilising and pooling "relevant issues and required information" (Habermas, 2006, p. 416). This idealised function can hold true for both the specific sectoral media and mass media formats selected for this thesis.

Mass media is considered to be of significant importance in contemporary societies (Strömbäck, 2009). The mass media serves different roles, *e.g.* by informing and presenting information to the audience that they would otherwise not have encountered. The mass media is supposed to provide a platform for the formation of political opinion among various societal actors such as environmental organisations, business associations, and party representatives (Schmidt, Ivanova, & Schäfer, 2013)

In contrast to mass media, sectoral media is directed at a particular target group in society. The members of the sector form the sectoral media's common perceptions and beliefs that influence policy-making in the sector.

However, the influence of media is not limited to the policy agenda. The influence of the media goes beyond that. Elliott (1972) emphasises that media communication has its own logic. Political actors reproduce the logic by adapting to it in order to get published (Altheide & Snow, 1979), *e.g.* by constructing events that are only created to generate publicity in the media (Kepplinger, 2002) or by strategically using news factors to match media selection criteria (Galtung & Ruge, 1965). Previous research has identified that this management of information also occurs in forest debates (Kleinschmit & Krott, 2008).

Climate change in the media is described as "crucial for the societal uptake of climate change and climate politics" (Schmidt et al., 2013, p. 1) since the issue of climate change cannot be experienced by most people (Moser, 2010). The other reason is that mass media create a forum for legitimising climate governance (Nanz, P., Steffek, 2004, p. 321; Schneider, Nullmeier, & Hurrelmann, 2007, p. 136). Therefore, mass media coverage of climate change may create a situation ''where it is conducive for governments to act, or hard for them not to act in the face of perceived pressure to initiate a policy response (Newell, 2000, p. 94)" (Schmidt et al., 2013).

4. Analytical framework

4.1 Frame analysis

Frame analysis allows perceptions found in the media debate to be described. The frame analyses carried out in this thesis enables first an assessment of the general course and content of the national and sectoral debates on the forest-climate change nexus (focusing on the role of forests), and second, to enable a discussion of the effects of media communication on policy implications, namely the potential support of climate policies through media communication, with a focus on mobilisation and policy integration in and across several sectors. In order to be able to discuss these diverging policy implications, two different frame analyses were designed for analysing mobilisation and policy integration.

Several areas of the social sciences have developed their understanding of what a frame is, where it comes from and the best way to perform a frame analysis. 6 (2005) states that the least common denominators for all frames are that they have a bias for action and organise experience. Researchers in policy studies often use the frame analysis developed by Schön & Rein (1994). Academics studying social movements mainly use the framing approach developed by Benford & Snow (2000) which was developed as an explanation for people supporting and partaking in the activities and campaigns of social movement organisations (Snow, Rochford, Worden, & Benford, 1986). Benford & Snow (2000, p. 614), based on Goffman (1974, p. 21), state that frames help individuals to "locate, perceive, identify and label". Collective action frames have a similar function, since their aim is to condense the "world out there", but in ways that are anticipated to mobilise supporters to gain support from others while dismissing "the others" (Altheide & Snow, 1988, p. 198). Thus "collective action frames are action-oriented sets of beliefs and meanings that inspire and legitimate activities" (Benford & Snow, 2000, p. 614).

The frame analysis that Benford and Snow (2000) developed ascribes different roles to actors in response to a problematic condition or situation. In the need for a change, different actors are given attributions, such as victim, causer and helper. The core framing task consists of "diagnostic framing" (problem identification and attributions), "prognostic framing" and "motivational framing" (Benford and Snow, 2000). In this study the frame analysis to which reference is made was developed by Benford and Snow and concentrates on diagnostic and prognostic framing, enabling a discussion on the mobilisation of consensus concerning the issue of the forest-climate change nexus.

Diagnostic framing consists of naming a victim, and a causer, while the prognostic frame consists of a helper. To be framed as a victim implies two things: first, that it is of moral advantage to be considered a victim of unfair treatment and second that the role of a victim is often seen as having little power or ability to solve the problem. The helper, on the other hand, is the most beneficial role as he/she can, for example, be someone already working to solve the problem or an actor in a position to solve a problem, irrespective of the attempts that have been made to solve the problem. The least beneficial role is the causer. Mobilisation is dependent on how these roles are ascribed.

Another way in which frames can affect the support of policies is by contributing to or hindering policy integration. Policy integration is defined in this thesis as cognitive integration. The cognitive aspect is beneficial as it aims at capturing the "more embedded and implicit sectoral ideas"(Persson, 2007, p. 43). Ideas are important as they serve as road maps, limiting choices by excluding some interpretations and can help or hinder joint efforts to attain "more efficient" outcomes (Goldstein & Keohane, 1993, p. 12). The concept of policy framing can be used to identify the cognitive integration of certain issues. Policy positions are believed to rest on "underlying structures of belief, perceptions and appreciation which we call "frames"" (Schön & Rein, 1994, p. 23). Studies on environmental policy integration (EPI) have analysed learning by assessing changes of policy frames over time (Gerger Swartling, Nilsson, Engström, & Hagberg, 2009). Learning in EPI is understood to imply "change in thought about policy, which subsequently contributes to a change in the policy process (Norberg-bohm, 1999; Pearson, Foxon, Makuch, & Mata, 2004)" (Gerger Swartling *et al.*, 2009, p. 50). To discuss the integration of bioenergy policy in different sectors, the concept of frames developed by Schön & Rein (1994) is used, as I am interested in a frame that helps in the construction of a problem in a particular policy situation (this is what Schön & Rein (1994) refer to as a *policy frame*).

4.2 STANDING

Numerous political actors struggle to find an opportunity to present their "definition and construction of social reality" in the media (Gurevitch & Levy, 1985, p. 19). Actors who adapt to the rules of media logic, are professional in how they handle media events and have a certain degree of status in the political process have a greater probability of their views being presented in the media (Gerhards & Neidhardt, 1998). When an actor succeeds in placing his/her statement in the media, the actor has standing: "By standing, we mean having a voice in the media. […] Standing refers to a group being treated as an actor with a voice, not merely as an object being

discussed by others" (Ferree, Gamson, Gerhards, & Rucht, 2002). Trumbo (1996) uses a similar identification of the actors who succeed in media representation, referring to "claim-makers". The approach to standing taken by Ferree *et al.*, (2002) will be used in this thesis and is operationally defined as the number of times an actor is quoted, either directly or indirectly. The concept of standing will only be used in the quantitative analysis, serving as an indicator of which actors dominate in the debate on the forest-climate change nexus as these actors have the opportunity to shape the debate in accordance with their frames.

4.3 CHANGE OVER TIME

To understand the debate on the forest-climate change nexus and the relationship with the political debate on climate change, the time aspect has been considered. As there is already an extensive amount of research on the climate change debate, the dimension of change over time will enable a discussion on whether the forest-climate change nexus and sectoral debates on bioenergy are connected to the broader debate on climate change.

5. Research questions

The overarching research question – "How is the role of forests in climate policy discussed in the Swedish media?" – has been divided into two sets of detailed research questions. The first set approaches frames in the context of social movements, while the second set approaches frames as an indicator of cognitive policy integration.

1. Debate in the context of mobilisation:
   I. Has the media debate on the forest-climate change nexus changed over time?
   II. Which actors have standing in the forest-climate change nexus in the media debate?
   III. Which diagnostic and prognostic frames have been used in the forest-climate change media debate?

2. Debate in context of policy integration
   I. Have sectoral debates on bioenergy produced by forest products changed over time?
   II. How is the goal of the bioenergy policy framed in the agricultural, energy and forest sectors?
   III. Do the agricultural, energy and forest sectors frame the goal of bioenergy from forest products coherently?

The papers attached to the thesis deal with the detailed research questions. The subject of this thesis is to answer the overarching research question by referring to the results presented in the papers.

6. Empirical design

The analysis of the media debate is designed to explore how the role of forests in climate and energy policy is discussed and framed in the Swedish media. Quantitative analysis enables trends to be captured and patterns established in a large number of cases. The disadvantage of the quantitative approach is that details might be lost, while adding a qualitative component to quantitative analysis helps improve interpretation of the data. It has been stated that quantitative and qualitative studies have advantages and complementary disadvantages – therefore a combination of the two is a solution (Teorell & Svensson, 2007). In this case, quantitative analysis is conducted to obtain a more holistic picture of the perception of the forest-climate change nexus in the Swedish mass media debate by describing the prominence of the debate over time, identifying actors with standing and analysing diagnostic and prognostic frames. Qualitative analysis will be used in the sectoral media to analyse the frames used in the sectoral media in greater detail to enable discussion about whether the goals of bioenergy policy concerning forest biomass have been integrated into the agriculture, energy and forest sectors and to what extent they have been integrated coherently across the sectors. The prominence of the issue of bioenergy over time will also be described.

6.1 MATERIAL

Quality national newspapers are still considered to have influence on policy-making despite the variety of media formats (Walgrave *et al.*, 2007). *Dagens Nyheter* (DN) can be considered a quality national newspaper since it is perceived as such by the lay mass, politicians and other journalists so it can be assumed to have a significant impact on policy-making. Furthermore, DN is one of the newspapers with the broadest scope in Sweden with a readership of 785,000 daily (ORVESTO Konsument, 2013).

The analysis focuses on articles published between January 1992 and December 2009 as this time period covers the forest-climate change debate from the UNCED in Rio de Janeiro in June 1992. The search words used in the DN archive are ‘climate change’, ‘forests’ and ‘greenhouse gas’. Only those 394 articles referring to the forest-climate change nexus in at least one paragraph were selected for analysis.

To assess how the goal of bioenergy policy concerning forest biomass has been integrated in and across the different sectors, articles published in sectoral journals were analysed. The observation period covers the period

from January 2001, when the first EU Directive on Renewable Energy Sources (2001/77/EC) was issued, to December 2010.

Three sectors relevant to the goals of bioenergy policy concerning forest products were identified: the energy sector, the agricultural sector and the forest sector. The assumption made is that if there is no supply of bioenergy from the chosen sectors the climate mitigation goal will not be achieved. One journal was selected from each sector: *ATL* (agricultural journal), *Energimagasinet* (energy journal) and *Land Skogsland* (forest journal). The selection of journals is based on four different criteria: first, the sector journals had to describe themselves as connected to the respective sector; second, the relevance of the journals in the different sectors according to experts; third, the number of readers; and, fourth, for pragmatic reasons, the accessibility of the journals. The journals' online archives were searched using 'bioenergi', the Swedish word for bioenergy. Articles using the word bioenergy referring to bioenergy *from forest products* and relating it to a *problem*, *e.g.* by naming causal relationships or solutions, were selected for analysis. A total of 354 articles were used for the analysis: 103 from the agricultural sector, 142 from the energy sector and 109 from the forest sector journal.

6.2 METHODOLOGY

6.2.1 Quantitative analysis of the quality national newspaper

A quantitative analysis was performed on the national newspaper. Bryman (2008, p. 274) describes content analysis as an "approach to the analysis of documents and texts [...] that seeks to quantify content in terms of predetermined categories and in a systematic and replicable manner". The category system used was deductively designed, building on the theories introduced in the analytical framework. Two units of analysis are the article and the speaker's statement. An article could contain more than one statement. The article's formal characteristics were analysed, *e.g.* "author" and "date of publication". The statement is a unit of analysis defined as direct or indirect quotes from a speaker which is a person or organisation in the following categories: speaker (standing), victim and causer (diagnostic frame) and helpers (prognostic frame). Each statement in the paper needs to be referred back to a speaker. Where there are no quotations, the journalist is the speaker.

The actors in the categories of speaker, victim, causer and helper were arranged into the following sub-categories: "political and administrative system (PAS)", "scientists", "journalists", "enterprises", "non-governmental

organisations (NGOs)", "international organisations (IGOs)" and "others". (These categories are further divided into groups, *e.g.* "PAS" contains "politicians in government", "politicians not in government" and "administrators"). The roles of causer, victim and helper contained additional categories, such as "nature", "society", "developing countries" and "industrialised countries". These are not part of the speaker category as they cannot speak or do not speak with a united voice. A coding book was created in which all categories and sub-categories were defined. Each category has been illustrated with examples. A pre-test was carried out and led to improvements being made in the coding book. Two coders were trained to use the coding book and the data were processed in a SPSS statistics3 mask. Inter-coder reliability was tested during the process of coding the material. The SPSS data enabled further processing and interpretation of the data.

6.2.2 Qualitative analysis of the sectoral journals

Articles and statements were the unit of analysis in the sectoral journals. The articles served as a unit of analysis to enable an analysis of prominence over time. The change over time in published sectoral journals could then be used to compare the broader public debate with sectoral debates.

The statements were analysed according to the frame analysis developed by Schön & Rein (1994). The frame analysis was influenced by Jensen and Johnsen (2000), implying a two-step analysis. The first step contained an "open coding" where all citations on bioenergy were carefully read and the observations were noted and named. This method had an inductive approach. The statements were grouped under different themes. Then, as a second step, the focused coding consisted of categorising and arranging statements with similar patterns in the same frame. The important aspect uniting different statements in a frame was the reference to a particular problem and the proposed solution. Lastly, the material was re-read to complement the categorisation and critically analyse whether the frames were consistent.

The frames consist of one or more statements that follow the same line of argumentation. The frequency of statements supporting a particular frame was also taken into account. A three-level scale that showed the frequency of statements using a frame was applied to allow a comparison of the different priorities within and between the sectors.

7. Results

7.1 MASS MEDIA DEBATE

7.1.1 Change over time

The number of articles peaked in 1997, 2001 and 2007 (Figure 2) in the mass media. The first peak in the reporting on climate change and forests occurred in 1997, which can be assumed to be an affect of the negotiations on the Kyoto Protocol (United Nations, 1998). The protocol pronounces on the links between climate change and forests and promoted the sustainable management of carbon sinks through afforestation and reforestation.

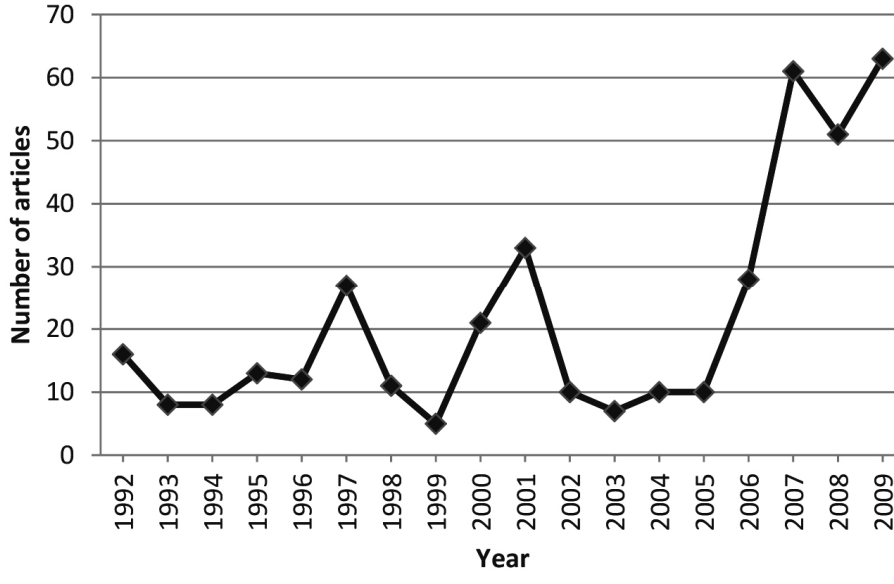

Figure 2. Number of articles published on the issue of forest and climate change in Dagens Nyheter between 1992 and 2009. Source: authors' analysis.

The peak in 1997 was followed by a decline in articles until 1999, after which the number of articles increased again up to 2001 when there was a second peak with 33 articles. This peak can be traced back to the new US government's resistance to the Kyoto Protocol. This was then followed by a meeting in Bonn where a compromise was reached, and then a final meeting of the seventh Conference of the Parties (COP 7) of the UNFCCC in Marrakech (UNFCCC, 2001) the same year when a compromise agreement was made. The rules that were agreed upon were relevant for forest management. Thereafter the number of articles published on the topic of forests and climate change decreased until 2005. In 2005 reporting

increased, with its third peak in 2007 with 61 published articles. This peak coincides with the publishing of the 4th assessment report of the Intergovernmental Panel on Climate Change (IPCC) (IPCC, 2007). The report pronounced on the seriousness of climate change and anthropogenic emissions of greenhouse gases. In 2007, the link between climate change and forests was strengthened with the Bali Action Plan (agreed at COP 13) (UNFCCC, 2008) that included the Reduction of Emissions from Deforestation and Forest Degradation (REDD) instrument, comprising the role of conservation, sustainable management and enhancement of forest carbon stocks. The idea of REDD is that the use of forest land should be competitive in comparison to other land uses. To achieve this, financial support for reduced deforestation and forest degradation was introduced to reduce emissions (Glück *et al*., 2010).

7.1.2 Standing

The most prominent speakers in the debate were scientists and PAS, signifying ‘‘politicians in government’’, ‘‘politicians not in government’’ and ‘‘administrators”. The frequency of science and PAS-speakers over time is illustrated in Figure 3. The frequency varies in the same way for both groups, except during the two peaks in 2001 and 2007. In 2001, the peak among PAS-speakers can be interpreted as a response to the implementation of the Kyoto Protocol, the newly-elected US government’s opposition to it and the associated political compromises that followed in Bonn and Marrakech (COP 7). The peak in 2007 among scientists can be explained as a result of the debate on the IPCC report and the Nobel Prize awarded to Al Gore. Most scientists (51 out of 99) in the debate were considered natural scientists, only 6 belonged to forest sciences.

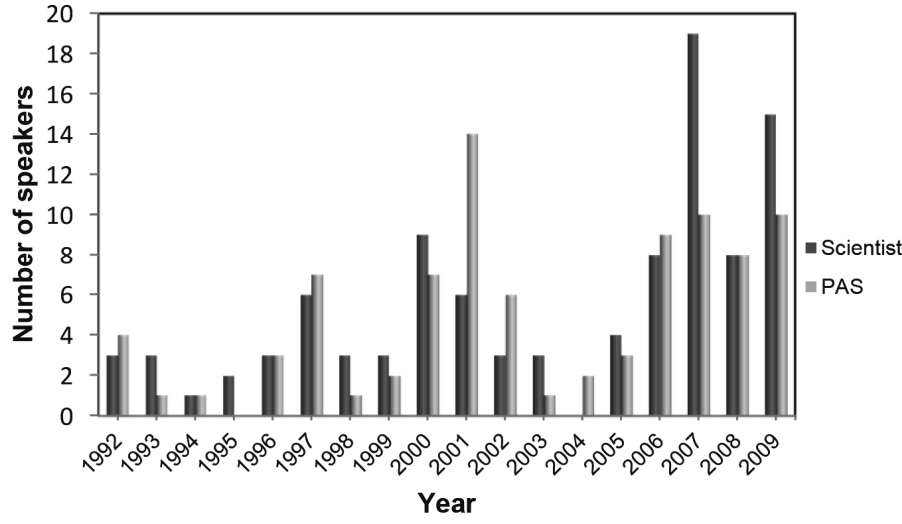

Figure 3. Standing of scientists and PAS in the media in the forest-climate change debate between 1992 and 2009. Source: authors' analysis.

The other speakers in the debate were enterprises (10 %), which is high compared to previous research on forest and agricultural policy issues (Böhm, Schulze, Kleinschmit, Spiller, & Nowak, 2009; Feindt & Kleinschmit, 2011; Kleinschmit & Krott, 2008). Organisations such as the United Nations (6 %) and NGOs (5 %) played a minor role in the Swedish debate on forest and climate change.

7.1.3 Framing

During the period analysed, 359 causers were mentioned. The main culprit mentioned was society (45 %). PAS (14 %) and enterprises (10 %) were also mentioned as causers. When distinguishing between the actors within PAS, it is politicians in government and administration that get blamed for causing climate problems. Among enterprises, it is mainly forest enterprises (39 %) that are blamed. Scientists, as the dominant speakers, mainly blame nature as the causer of the problem.

In 130 statements, no victims were mentioned. In the statements that did mention a victim, nature (257 statements) and society (95 statements) were the most frequently mentioned victims. It was rare that a victim was specified by pointing to a particular actor or country.

In comparing the tendency to name victims, causers and helpers, it can be stated that speakers most often assign the role of helper to an actor (462

helpers named). In 129 statements, no helper was mentioned. PAS was the most frequently attributed helper (32 %), mainly by PAS themselves but also by others. Society was the other actor attributed with the helper role in an appeal for society's commitment. Enterprises, PAS and NGOs named enterprises as helpers, but only to a small degree.

7.1.4 Summary of the results on the forest-climate change debate

The importance of the forest-climate change debate in Sweden's national media and the actors involved in the debate are connected to events in international climate politics. When comparing the different groups of speakers, scientists and politicians are the main actors with standing. Scientists frame the forest-climate change issue in a balanced and scientific way, trying to explain its complexity, while politicians demonstrate that the issue of climate change is politically relevant for Sweden. The public attention of politicians with standing is used strategically to blame opponents and pronounce their own abilities and skills in problem solving. The forest-climate change nexus is characterised by abstraction and depoliticisation by scientists and PAS as dominant speakers, not pointing towards the specific actors suffering, but instead towards nature. Furthermore, the assignment of helper roles to society and politicians implies that little pressure is placed on particular actors, and consequently there is limited potential for mobilisation.

7.2 SECTORAL JOURNAL DEBATES

7.2.1 Change over time

The focus on the bioenergy issue changed over the period of time observed. The debate peaked in 2006 with 56 articles (Figure 4). Articles published in the sectoral journals at that time refer to the launch of the Swedish Oil Commission's report. The Commission's aim was to suggest how Sweden could become less dependent on oil (Statsrådsberedningen, 2006). After this peak, the number of articles published annually decreased to the end of the study period (2010). In 2010, the number of articles published on bioenergy was lower than at the beginning of the study period (33/year).

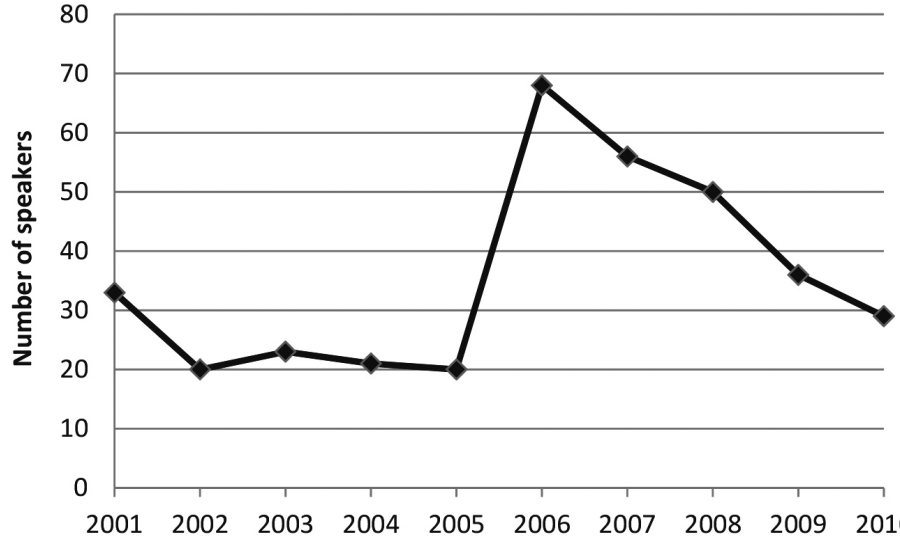

Figure 4. Number of articles published annually in ATL, Energimagasinet and Land Skogsland during the study period (2001-2010). N=354. Source: authors' analysis.

7.2.2 Frames

Ten frames on bioenergy were identified in agricultural, energy and forest sectoral journals during the period analysed. Four frames had a contra-frame, connecting bioenergy to similar aspects but interpreting them differently.

Profitability/Profitability scepticism frame

The most commonly occurring frame in all sectors is the frame highlighting the profitability of bioenergy, referred to as the 'profitability frame'. In the agricultural and forest sectors, bioenergy is mainly seen as an opportunity for economic benefit. The greater demand for forest products (as bioenergy) implied by the 'profitability frame' is welcomed by the **agricultural** and **forest** sector since it is expected to contribute to increased revenues.

The energy sector mainly uses the 'profitability frame', but not only sees business opportunities in the production of bioenergy from the forest producer perspective, but also in the development and export of technical knowledge and expertise. By stressing the profitability of bioenergy, the energy sector compares bioenergy to other sources of energy such as oil. As oil is subject to a CO_2 tax, it is concluded that it is better to invest in bioenergy. The benefits of using bioenergy in terms of green certificates and emission trading schemes are also emphasised.

To a limited extent, profitable bioenergy production is contested in the **agricultural** and **forest** sectors. The 'profitability scepticism' frame is supported by a few statements and includes a priority towards profitability, but questions whether bioenergy production is profitable. This scepticism is illustrated in references to previous situations that have not matched expectations in terms of revenues for forest owners and contractors. This frame includes an attribution to different roles in the sense that policymakers are seen as 'unreliable advocates' with unrealistic promises of profitability. In contrast, forest owners and forest managers are seen as victims who believe in the policy visions but fail to receive the promised benefits. The relationship between the untrustworthy visionaries and the hard-working victims who ultimately get nothing is hierarchical.

Intensifying forest management/Environmental threat frame

The two frames of 'intensifying forest management' and 'environmental threat' are based on the understanding that forest resources are limited, causing trade-offs between the use of forest products for bioenergy and other demands. The two frames are found in all sectors but are only supported by a few statements.

When it comes to a solution to limited forest resources, the frames diverge. The 'environmental threat' frame stresses the effects on nature and environmental values associated with increased production. It is stated that it is not possible to resolve the trade-off between production and environmental values. The solutions to this dilemma are vague in this frame – there is a greater emphasis on the problems associated with *e.g.* stump removal, impoverished soils and acidification in forests. This frame is found in all sectors, but the frequency to which it is used varies. The general solution suggested is the consideration of biodiversity and other environmental values in the production of bioenergy. The frame on 'environmental threat' is also used when discussing bioenergy production from countries other than Sweden, *e.g.* countries with rainforests. In these cases, safeguards are raised as a possible solution.

In contrast, the 'intensified forest management' frame provides solutions as to how bioenergy production can increase while using forest products for other purposes. Increased productivity is the solution to overcoming resource limits. The measures proposed to increase productivity vary between sectors. Refining and fertilisation are two measures proposed by the **agriculture** and **forest** sectors. The **energy** sector emphasises traditional and new forest measures, such as thinning and stump removal.

The forest sector can be distinguished from the other sectors since it includes concerns about the lack of resources that cannot be solved by intensified forest management. The lack of resources is blamed on public policies that have encouraged an increased use of bioenergy and therefore created higher wood prices. This affects the pulp and paper industry as well as wood manufacturing. The frame includes a concern about the future situation of forest products in Sweden.

Independent energy supply frame

The dependency on other countries for energy supply is seen as a problem in the frame of "independent energy supply". This frame is found in **all** sectors supported by a few statements and promotes the use of domestically produced bioenergy as a key source of energy. The reasons why it is desirable to be independent from other countries for energy supply differ, but the common denominator is that dependency includes a risk of unpredictable supply, *e.g.* through the diminishing source of fossil fuels or an oil crisis due to instability in an oil producing country or region. The risk of irregularity in supply is also described in economic terms; the Swedish economy is expected to suffer if it is too dependent on foreign energy producers such as Russia.

Increasing employment/Decreasing employment frame

The frame 'increased employment' emphasises the new jobs and income that bioenergy is expected to generate, particularly in rural areas. This frame is used in **all** sectors but supported by just a few statements. However, the **agriculture** sector uses the conflicting frame 'decreased employment'. Bioenergy production is then positioned in relation to other kinds of forest-based production that are more labour intensive. This sort of production is expected to employ more than bioenergy production.

Climate friendly/Carbon emissions frame

The two climate frames share a common problem description: global climate change is happening as a result of the use of fossil fuels and other energy sources. The 'climate friendly' frame is supported by several statements in the **agricultural, energy and forest** sectors. Bioenergy is seen as a substitute for fossil fuels as it is considered renewable, carbon neutral, and consequently 'climate friendly'. An increased production of wood to safeguard the bioenergy feedstock supply is therefore seen as a solution to the problem of climate change.

In the energy sector, the 'climate friendly' frame is linked to the 'environmental threat' frame and the frame on profitability. When discussing

limits for the extraction of biomass in forests, it is economic profit that is discussed rather than the limits of the environment.

The sectors state that there is a risk that the measures taken to increase the use of forest products lead to negative effects on environmental values. To avoid the undesirable consequences of increased use of bioenergy, the speakers suggest standards for 'well-produced' bioenergy to balance climate and other environmental objectives. The carbon neutrality of bioenergy is questioned in the conflicting 'carbon emission' frame used in the **energy** sector. It is stated that the levels of GHG emissions resulting from burning wood can be compared to burning fossil fuels. Bioenergy is not seen as a solution to climate change.

Human health frame

The effects of bioenergy on human health are the subject of this frame which is only supported by a few statements. The combustion of bioenergy is believed to result in particles which so far have unknown effects on human health. Solutions to this are not presented, but the difficulty of eliminating particle emission is emphasised. This frame is only found in the energy sector.

7.2.3 Summary of the results of the debate on bioenergy

The results show that there are ten frames on bioenergy from forest products in the agricultural, energy and forest sector journals between 2001 and 2010 in Sweden. The change over time does not follow international climate politics, but rather national energy events. The most prominent perspective in all sectors refers to bioenergy from an economic perspective, in particular as an economic benefit. Ecological perspectives are also part of the bioenergy debate in the different sectors. The 'environmental threat' frame shows how bioenergy policy is perceived as a risk to the environment. However, the dominance of the economic perspective in the sectors leads to a bias towards intensified forest management, despite the conflict with ecological perspectives.

In the sectoral media, the goals of bioenergy policy are integrated since the majority of statements point to the emerging options with an increased use of forest biomass from bioenergy. There is coherence in the integration of the bioenergy goal across all three observed sectors as the economic benefit frame has prevailed in all of them. Conflicts with the bioenergy goal can also be identified coherently in all sectors when using the environmental threat frame. However, there have also been minor differences between the sectors in the way the bioenergy goal is framed. The energy sector uses frames on the climate and health effects of bioenergy that conflict with the goal of increased

use of forest products for bioenergy. In contrast, the agriculture and forest sectors use climate frames as an argument for the use of forest biomass. Instead, to a small extent, there are critical voices in these sectors doubting the economic benefits. In general, the coherence in their way of framing bioenergy goals is greatest between the agricultural and forest sectors.

The following table (Table 1) has been compiled from the qualitative analysis of the frames present in the agricultural, energy and forest sectors. The table has several dimensions: frame dimension, frequency and whether the frame supports the goals of the bioenergy policy (were integrated).

Table 1. The bioenergy frames in ATL, Energimagasinet and Land Skogsland between 2001 and 2010

Frames	Agricultural sector	Energy sector	Forest sector	Integrated/not integrated
1. a. Profitability	***	***	***	*Integrated*
b. Profitability scepticism	*		*	*Not integrated*
2. a. Intensified forest management	*	*	*	*Integrated*
b. Environmental threat	*	*	*	*Not integrated*
3. Independent energy supply	*	*	*	*Integrated*
4. a. Increasing employment	*	*	*	*Integrated*
b. Decreasing employment	*			*Not integrated*
5. a. Climate friendly	**	**	**	*Integrated*
b. Carbon emissions		*		*Not integrated*
6. Human health		*		*Not integrated*

(***) signifies a great number of statements supporting the frame, (**) shows that the frame is supported bv several statements and, (*) indicate that only a few statements support the frame. Integrated: supporting an increased use of bioenergy. Not integrated: not supporting an increased use of bioenergy.

8. Discussion

The papers, which form the basis of this thesis can be described as follows:

Table 2. "Between science and politics: Swedish newspaper reporting on forests in a changing climate" (Paper I) and "Integration of bioenergy policy – a multi-sectoral frame analysis" (Paper II)

Paper	Paper I	Paper II
Aim	To obtain a better understanding of the forest-climate change nexus in the national media debate by analysing frames, standing and change over time.	To capture the frames of bioenergy in the sectoral media and the attention on bioenergy over time.
Methodology & material	Quantitative analysis of forest and climate change in Swedish national dailies between 1992 and 2009.	Qualitative frame analysis of bioenergy in Swedish sectoral journals between 2001 and 2010.
Variables	Framing, standing, change over time.	Framing, change over time.
Results	Scientists and politicians set the agenda. The most commonly used framing points to society as the causer, nature as the victim and politicians and administration as the helpers. The debate peaks simultaneously with international climate politics event.	The most commonly used bioenergy frame in all sectors uses an economic perspective. In the agricultural and forest sectors increased bioenergy production is seen as an environmental threat.
Discussion/ Conclusion	There is low/little potential for mobilisation considering how the forest-climate change nexus is covered in the mass media. Forests are framed as victim of climate change.	Frames in sectoral media indicate that bioenergy policy is integrated in all sectors. Bioenergy policy is also coherently integrated. Forests are seen as source of bioenergy.

The overarching aim of this thesis concerns how the role of forests in relation to the debate on climate change is discussed in Swedish media.

In the quantitative analysis, the role of forests in the forest-climate change debate adapts to the character of the broader debate on climate change in the media in that the prominence of the forest-climate change debate follows the

trends of international climate policy events. The articles in the newspaper do not focus explicitly on international events, but make reference to them, such as the Kyoto Protocol and the publication of the IPCC's fourth assessment report. Actors make "pay offs" (Altheide & Snow, 1979, p. 84) in terms of publicity of the events and the main actors with standing are scientists, politicians and journalists. The same actors also prevail in the broader media debate on climate change (Berglez, 2011; Taylor & Nathan, 2002).

Similarities between the broader climate debate (without forests) and the narrower debate around the forest-climate change nexus indicate that the latter is just a sub-debate of the former instead of being an independent debate with specific characteristics. This can be interpreted as a causality resulting from the logic of media communication applied to different subjects in a similar way, and as a result of actors with standing adapting to these rules accordingly. The more detailed results of the media debate show that the similarities are not limited to a debate about forests aligned to the broader climate debate, but are as well result of involving the same agencies with standing. In many cases, actors with standing are not part of the forest sector. Scientists in particular are only affiliated with forest sciences to a minor extent and scientists with standing are mainly experts in natural sciences. Following studies of the relationship of the media and their informants (Verhoeven, 2010, p. 347), it can be assumed that these scientists do not only appear as experts in the debate on forests and climate, but also in the broader climate debate or on other ecological issues.

In the broader media debate, forests can be interpreted as an "appendage" responding to the debate on climate change since the specific perspectives of the forest sector are limited. Reference is made to specific actors from the sector (possibly) impacted by or impacting on climate change to a limited extent, such as forest owners or the forest industry. Instead, the forest-climate change debate in the national newspaper reinforces the (scientific) complexity also observed in the broader climate debate. This is linked to a specific focus on the ecological dimension of the forest-climate change issue. The "appendage role of forests" in responding to climate change can also be observed in the way forests are framed. Forests are a part of the "nature" category which is mainly framed as a victim. There is an absence of forests being described as solvers in the mass media debate in Sweden. This result can be compared to the media study of the debate in Bangladeshi and international media. The results show that the main focus in the Bangladeshi discussion concerns the undesirable impact of climate change on Bangladeshi forests (forests as victims) presented by journalists and

politicians. In contrast, scientists and NGOs in the international media debate focus on the mitigating role of forests (the solver) (Sadath *et al.*, 2013). Thus, the two national debates analysed are similar in attributing the role of a dependent and suffering object to forests, in contrast to international media debates framing forests as subjects in the climate debate.

The analysis of the bioenergy debate in the sectoral media shows another way of framing the forest-climate change nexus, focusing on bioenergy from forest biomass. The prominence of the debate partly corresponds to the climate debate in the mass media. However, the debate in the sectoral media is encompassed by references to the actors' major interests rather than adding to the complexity. In the sectoral media, the frames on bioenergy from forest products that refer to business opportunities dominate. Previous research that focused on the debate on climate change in agricultural sector journals confirms the economic perspective on climate change (Asplund *et al.*, 2012). However, among private forest owners, the "objective of making profit is not dominating" (Krott, 2005, p. 52). Previous research on small scale private forest owners shows that "a sole emphasis on economic benefits is not desirable for the forest owners' point of view" (Ingemarson, Lindhagen, & Eriksson, 2006, p. 249). It has been shown that the bioenergy policy in particular is seen as a win-win situation, consisting of a combination of environmental, security and economic goals (Söderberg & Eckerberg, 2012). The issue of climate change has shifted from being perceived as a distant, complex environmental or energy issue to a "business chance" and an "innovation opportunity", as well as a chance for new markets (Mickwitz *et al.*, 2009). This can be illustrated by the sectoral media debate.

In addition to discussing the content of the analysis, the methodological approach applied is discussed. The analysis of the sectoral journals is based on the premise that they should represent an open debate of the selected sectors. With regard to the agricultural and forest journals, representation of the sector is targeted at small-scale land owners. The similarities of the target group can explain the correspondence in the frames identified. A different representation of the sectors, particularly of the forest sector, could have enabled a presence of other frames on bioenergy than the ones found in the analysis since it can be expected that the forest industry, for example, has a more biased perspective about the increased production of bioenergy from forest products since the industry is competing for the same raw materials. It has been shown the conflict between the frames of 'intensified forest management' and 'environmental threat' have a greater influence than shown in our analysis (Geijer, Bostedt, & Brännlund, 2011), which is due to

the analysis' choice of the three sectors and the respective representing journals. Lindahl & Westholm (2012, p. 154) conclude in their study of perceptions and strategies of key actors in the forest sector that a "major division separates actors who perceive biomass supply unlimited, or at least not constraining, and those who stress scarcity and re-distribution of resources". Despite the shortcomings of the analysis to capture the whole forest sector, it can be stated that more than half of the forest area is owned by small-scale forest owners (also referred to as Non-industrial, smallholder or family forest owners (Harrison, Herbohn, & Niskanen, 2002)) in Sweden. The forest policy making among these actors can then be expected to have impact on Swedish forest use.

9. Conclusions

The analyses revealed two major roles of forests in media response to climate change: in the national media, the forest-climate change nexus is framed as an appendage of the climate debate, as being highly complex and as taking an ecological perspective in which forests are framed as victims with no specific helper. Meanwhile, the sectoral journals 'create their own' debate and align it with the interests of the sector by highlighting the business opportunities, consequently contesting the claim that sectors are resistant to environmental policies (Hertin & Berhout, 2003; Jordan & Lenschow, 2010). The prevailing actors in the sectors are able to align the bioenergy goals with their interests.

Furthermore, the analysis revealed that the forest and climate mass media debate shows limited potential for mobilisation due to the lack of specifying actors. This can be interpreted as a consequence of the speakers dominating the debate as politicians mainly blame other politicians and scientists being reluctant to point out particular actors' responsibility (Trumbo, 1996). The results confirm the conclusions drawn by Trumbo, whereby the degree of involvement of scientists in a given debate decreases with increasing politicisation (Trumbo, 1996). In the case of the Swedish forest and climate debate in the mass media, neither scientists nor politicians contribute to mobilisation, the latter miss the opportunity for mobilisation as they only refer to their own group, blaming other politicians, presenting themselves as actors and referring to nature in general as the victim.

Following the study from Trumbo (1996) one could have expected more specific judgement frames about victims, causers and helpers from special interest groups but these groups are only marginally involved in the discussion in the Swedish mass media debate on forests and climate change.

The role of forests as a source of bioenergy in Sweden can be connected to the conflict between forest management and conservation (Lisberg Jensen, 2002). As supporting the goal of bioenergy policy can be considered an environmental act as well as the opposite, depending on the focus, renewable energy or nature conservation - the conflict is getting more complex. Geijer et al. (2011) highlight this dilemma by the paper "Damned if you do, damned if you don´t" – focusing on the conflict between environmental goals in the forests. The conflict is also found in previous research focusing on the perceptions in policy documents of the sectors of forest, agriculture, energy and transport and among environmental groups. Environmental groups are questioning how bioenergy from forest products is promoted

despite the use of environmental arguments by the sectors (Söderberg & Eckerberg, 2012).

The two frames with an environmental perspective: 'environmental threat' and 'climate friendly' in the analysis of the sectoral media illustrates the need for deliberation on the definition of what is to be considered environmental. The conflict between the perceptions of forests either as a victim of bioenergy production or as a solver of climate change demands policy making processes that consider these differences. Involving multiple stakeholders could be one way forward to include diverging frames of forests in policy making.

In conclusion, global challenges such as climate change lead to different perceptions of forests. The analyses showed that the forest-climate nexus is perceived differently in sectoral and mass media. Forests are seen both as an economic opportunity and as a part of nature. These diverging perceptions of forests in climate change require policy making processes that are able to handle these frame conflicts.

In future research, it would be relevant to analyse the debate on bioenergy (from forest products) in the national media in order to be able to determine whether the emphasis on the applied economic aspect of forests found in sectoral journals is an effect of the media format or whether the issue of bioenergy as such shifts the perspective from an ecological one to an economic one.

References

6, P. (2005). What's in a frame? Social organization, risk perception and the sociology of knowledge. *Journal of Risk Research*, *8*(2), 91–118. doi:10.1080/1366987032000081213

Altheide, D. L., & Snow, R. P. (1979). *Media logic.* Beverly Hills: Sage Publications.

Altheide, D. L., & Snow, R. P. (1988). Toward a Theory of Mediation. In I. Anderson & A. James (Eds.), *Communication Yearbook 11*. Newbury Park, CA: Sage Publications.

Asplund, T., Hjerpe, M., & Wibeck, V. (2012). Framings and coverage of climate change in Swedish specialized farming magazines. *Climatic Change*, *117*(1-2), 197–209. doi:10.1007/s10584-012-0535-0

Ball, B. P. (1976). Water Pollution and Compliance Decision Making. In C. Jones & R. Thomas (Eds.), *Public Policy-Making in the Federal System.* (pp. 169–87). Beverly Hills, California: Sage.

Beck, U. (2010). Climate for Change, or How to Create a Green Modernity? *Theory, Culture & Society*, *27*(2-3), 254–266. doi:10.1177/0263276409358729

Beland Lindahl, K., & Westholm, E. (2010). Food, Paper, Wood, or Energy? Global Trends and Future Swedish Forest Use. *Forests*, *2*(1), 51–65. doi:10.3390/f2010051

Benford, R. D., & Snow, D. A. (2000). Framing Processes and Social Movements: An Overview and Assessment. *Annual Review of Sociology*, *26*(2000), 611–639.

Benton, M., & Frazier, P. J. (1976). The Agenda Setting Function of the Mass Media At Three Levels of "Information Holding." *Communication Research*, *3*(3), 261–274. doi:10.1177/009365027600300302

Berglez, P. (2011). Inside, outside, and beyond media logic: journalistic creativity in climate reporting. *Media, Culture & Society*, *33*(3), 449–465. doi:10.1177/0163443710394903

Bryman, A. (2008). *Social Research Methods* (3rd ed.). Oxford: Oxford University of Press.

Böhm, J., Schulze, H., Kleinschmit, D., Spiller, A., & Nowak, B. (2009). The Impact of Media Coverage on Proposed Strategies for Preventing Future Food Scandals. In M. Fritz, U. Rickert, & G. Schiefer (Eds.), *System Dynamics and Innovation in Food Networks - Proceedings of the 3rdInternational European Forum* (Vol. 2).

Cook, F. L., Tyler, T. R., Goetz, E. G., Gordon, M. T., Protess, D., Leff, D. R., & Molotch, H. L. (1983). Media and agenda setting: effects on the public, interest group leaders, policy makers, and policy. *Public opinion quarterly*, *47*(1), 16–35. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10261275

Eckerberg, K., & Sandström, C. (2013). Forest conflicts: A growing research field. *Forest Policy and Economics*, *33*, 3–7. doi:10.1016/j.forpol.2013.05.001

Elliott, P. (1972). *The making of a television series*. London: Constable.

European Parliament and the Council. Directive 2009/28/EC of the European Parliament and of the Council. (2009). Strassbourg.

Faaij, A. P. C. (2006). Bio-energy in Europe: changing technology choices. *Energy Policy*, *34*(3), 322–342. doi:10.1016/j.enpol.2004.03.026

Feindt, P. H., & Kleinschmit, D. (2011). The BSE Crisis in German Newspapers: Reframing Responsibility. *Science as Culture*, *20*(2), 183–208.

Ferree, M. M., Gamson, W. A., Gerhards, J., & Rucht, D. (2002). *Shaping Abortion Discourse. Democracy and the Public Sphere in Germany and the United States (Communication, Society and Politics)*. Cambridge: Cambridge University Press.

Galtung, J., & Ruge, M. (1965). The structure of foreign news: the presentation of the Congo, Cuba and Cyprus crises in four Norwegian newspapers. *Journal of Peace Research*, *2*(1), 64–91.

Gane, M. (2007). *Forest Strategy: Strategic Management and Sustainable Development for the Forest Sector* (pp. 1–32). Dortrecht, The Netherlands: Springer.

Geijer, E., Bostedt, G., & Brännlund, R. (2011). Damned if you do, damned if you do not—Reduced Climate Impact vs. Sustainable Forests in Sweden. *Resource and Energy Economics*, *33*(1), 94–106. doi:10.1016/j.reseneeco.2010.01.004

Gerger Swartling, Å., Nilsson, M., Engström, R., & Hagberg, L. (2009). Theory and Methodology for EPI Analysis. In M. Nilsson & K. Eckerberg (Eds.), *Environmental Policy Integration in practice: Shaping institutions for learning* (pp. 49–66). London: Earthscan.

Gerhards, J., & Neidhardt, F. (1998). *Zwischen Palaver und Diskurs. Strukturen und öffentliche Meinungsbildung am Beispiel der deutschen Diskussion zur Abtreibung*. Opladen: Westdeutscher Verlag.

Glück, P., Angelsen, A., Appelstrand, M., Assembe-Mvondo, S., Auld, G., Hogl, K., … Wildburger, C. (2010). Core components of the international forest regime complex. In J. Rayner, A. Buck, & P. Katila (Eds.), *Embracing Complexity: Meeting the challenges of International Forest Governance*. Vienna: IUFRO.

Goffman, E. (1974). *Frame analysis: An Essay on the Organization of the Experience.* New York: Harper Colophen.

Goldstein, J., & Keohane, R. O. (1993). Ideas and Foreign Policy: An analytical Framework. In *Ideas and Foreign Policy - beliefs, institutions, and political change* (pp. 3–30). New York: Cornell University.

Gurevitch, M., & Levy, M. . (1985). *Mass Communication Review Yearbook, vol 5*. Beverly Hills: Sage.

Habermas, J. (2006). Political Communication in Media Society: Does Democracy Still Enjoy an Epistemic Dimension? The Impact of Normative Theory on Empirical Research. *Communication Theory*, *16*(4), 411–426. doi:10.1111/j.1468-2885.2006.00280.x

Harrison, S., Herbohn, J., & Niskanen, A. (2002). Non-industrial , smallholder , small-scale and family forestry: what's in a name? *Small-scale Forest Economics, Management and Policy*, *1*(1), 1–11.

Hertin, J., & Berhout, F. (2003). Analysing Institutional Strategies for Environmental Policy Integration: The Case of EU Enterprise Policy. *Journal of Environmental Policy & Planning*, *5*(1), 39–56.

Huttunen, S. (2009). Ecological modernisation and discourses on rural non-wood bioenergy production in Finland from 1980 to 2005. *Journal of Rural Studies*, *25*(2), 239–247. doi:10.1016/j.jrurstud.2008.10.001

Ingemarson, F., Lindhagen, A., & Eriksson, L. (2006). A typology of small-scale private forest owners in Sweden. *Scandinavian Journal of Forest Research*, *21*(3), 249–259. doi:10.1080/02827580600662256

IPCC. (2007). Climate Change 2007: Synthesis Report.

Jensen, T. K., & Johnsen, T. J. (2000). *Sundhedsfremme i teori och praksis. En laere-, debat og brugsbok på grundlag av teori och praksisbeskrivelser*. Ringkobing Amt, Ringkobing: Sundhetsfremmeafdelningen.

Jordan, A., & Lenschow, A. (2010). Policy Paper Environmental Policy Integration: a State of the Art Review 1, *158*, 147–158.

Kepplinger, H. M. (2002). Mediatization of Politics : Theory and Data. *Journal of Communication*, *52*(4 December), 972–986.

Kleinschmit, D., & Krott, M. (2008). The media in forestry: government, governance and social visibility. In *Public and Private in Natural Resource Governance: A false Dichotomy?* (pp. 127–141). London: Earthscan.

Krott, M. (2005). *Forest policy analysis*. Dorddrecht, The Netherlands: Springer.

Lehtinen, A., Donner-Amnell, J., & Saether, B. (2004). Introduction: Northern forest regimes and the challenge of internationalization. In *Politics of Forests—Northern Forest—Industrial Regimes in the Age of Globalization;* (pp. 3–30). Aldershot, UK: Ashgate.

Levitt, R. (1980). *Implementing Public Policy.* London: Croom Helm.

Lindahl, K. B., & Westholm, E. (2012). Future forests: Perceptions and strategies of key actors. *Scandinavian Journal of Forest Research*, *27*(2), 154–163. doi:10.1080/02827581.2011.635073

Lisberg Jensen, E. (2002). *Som man ropar i skogen: Modernitet, makt och mångfald i kampen om Njakafjäll och i den svenska skogsbruksdebatten 1970-2000*. Lund University.

Lyytimäki, J. (2011). Mainstreaming climate policy: the role of media coverage in Finland. *Mitigation and Adaptation Strategies for Global Change*, *16*(6), 649–661. doi:10.1007/s11027-011-9286-x

Mccombs, M. E., Shaw, D. L., & Shaw, L. (1972). The Agenda-setting Function of Mass Media, *36*(2), 176–187.

Mickwitz, P., Aix, F., Beck, S., Carss, D., Ferrand, N., Görg, C., … Monni, S. (2009). *Climate Policy Integration, Coherence and Governance - Peer Report No 2*. Helsinki.

Ministry of Enterprise. En sammanhållen klimat- och energipolitik 2008/09:163 (2009). Stockholm, Sweden.

Ministry of the Environment. (2007). *Klimat- och sårbarhetsutredningen SOU, 2007:60*.

Ministry of the Environment. (2013). Climate policy. Retrieved October 30, 2013, from http://www.government.se/sb/d/5745

Moser, S. C. (2010). Communicating climate change: history, challenges, process and future directions. *Wiley Interdisciplinary Reviews: Climate Change*, *1*(1), 31–53. doi:10.1002/wcc.011

Nanz, P., Steffek, J. (2004). Global Governance, Participation and the Public Sphere. *Government and Opposition*, *39*, 314–335.
Newell, P. (2000). *Climate for Change: Non-state Actors and the Global Politics of the Greenhouse.* Cambridge, Newig: Cambridge University Press.
Norberg-bohm, V. (1999). Stimulating "green" technological innovation: An analysis of alternative policy mechanisms. *Policy Sciences*, *32*, 13–38.
Olausson, U. (2009). Global warming-global responsibility? Media frames of collective action and scientific certainty. *Public Understanding of Science*, *18*(4), 421–436. doi:10.1177/0963662507081242
ORVESTO Konsument. (2013). *Räckviddsutveckling 2004:3 – 2013:2*.
Paulraj, A., Ladi, A., & Chen, L. (2008). Inter-organizational communication as a relational competency: Antecedents and performance outcomes in collaborative buyer-supplier relationships. *Journal of Operations Management*, *26*(2008), 45–64.
Pearson, P., Foxon, T., Makuch, Z., & Mata, M. (2004). ESRC Sustainable Technologies Programme project progress report (end year 1). London.
Persson, Å. (2007). Different Perspectives on EPI. In M. Nilsson & K. Eckerberg (Eds.), *Environmental Policy Integration in practice* (pp. 25–47). London: Earthscan.
Sabatier, P., & Mazmanian, D. (1980). The implementation of public policy: a framework of analysis. *Policy Studies Journal*, *8*(4), 538–560.
Sadath, M. N., Krott, M., & Schusser, C. (2013). Forest-Climate Politics in Bangladesh's Media Discourse in Comparison to Global Media Discourse. *Open Journal of Forestry*, *03*(01), 1–7. doi:10.4236/ojf.2013.31001
Schmidt, A., Ivanova, A., & Schäfer, M. S. (2013). Media attention for climate change around the world: A comparative analysis of newspaper coverage in 27 countries. *Global Environmental Change*, *23*(5), 1233–1248. doi:10.1016/j.gloenvcha.2013.07.020
Schneider, S., Nullmeier, F., & Hurrelmann, A. (2007). Exploring the Communicative Dimension of Legitimacy: Text Analytical Approaches. In A. Hurrelmann, S. Schneider, & J. Steffek (Eds.), *Legitimacy in an Age of Global Politics* (pp. 126–155). Basingstoke, Hampshire: Palgrave Macmillan.
Schön, D. A., & Rein, M. (1994). *Frame Reflection: Toward the resolution of intractable policy controversies*. New York: Basic Books.
Sengers, F., Raven, R. P. J. M., & Van Venrooij, a. (2010). From riches to rags: Biofuels, media discourses, and resistance to sustainable energy technologies. *Energy Policy*, *38*(9), 5013–5027. doi:10.1016/j.enpol.2010.04.030
Skjølsvold, T. M. (2012). Curb Your Enthusiasm: On Media Communication of Bioenergy and the Role of the News Media in Technology Diffusion. *Environmental Communication: A Journal of Nature and Culture*, *6*(4), 512–531. doi:10.1080/17524032.2012.705309
Snow, D. A., Rochford, E. B., Worden, S. K., & Benford, R. D. (1986). Frame alignment processes, microbobilization, and movement participation. *American Sociological Review*, *51*(August), 464–481.
Statsrådsberedningen. (2006). *På väg mot ett oljefritt Sverige*. Stockholm, Sweden.

Strömbäck, J. (2009). *Makt, medier och samhälle. En introduktion till politisk kommunikation* (p. 295).
Söderberg, C., & Eckerberg, K. (2012). Rising policy conflicts in Europe over bioenergy and forestry. *Forest Policy and Economics*, *2020*. doi:10.1016/j.forpol.2012.09.015
Taylor, N., & Nathan, S. (2002). How science contributes to environmental reporting in British newspapers : a case study of the reporting of global warming and climate change. *The Environmentalist*, *22*, 325–331.
Teorell, J., & Svensson, T. (2007). *Att fråga och att svara: samhällsvetenskaplig metod*. Malmö: Liber AB.
Trumbo, C. (1996). Public Understanding of Science news coverage of an environmental issue. *Public Understanding of Science*, *5*(July), 269–283. doi:10.1088/0963-6625/5/3/006
UNFCCC. (2001). *The Marrakesh Accords & The Marrakesh Declaration*.
UNFCCC. (2008). *Report of the Conference of the Parties on its thirteenth session, held in Bali from 3 to 15 December 2007* (pp. 1–60).
United Nations. (1998). *Kyoto protocol to the United Nations Framework Convention on Climate Change*.
Walgrave, S., Soroka, S., & Nuytemans, M. (2007). The Mass Media's Political Agenda-Setting Power: A Longitudinal Analysis of Media, Parliament, and Government in Belgium (1993 to 2000). *Comparative Political Studies*, *41*(6), 814–836. doi:10.1177/0010414006299098
Verhoeven, P. (2010). Sound-Bite Science: On the Brevity of Science and Scientific Experts in Western European Television News. *Science Communication*, *32*(3), 330–355. doi:10.1177/1075547010362709
Westander, H., Henryson, J., & Lindberg, J. (2008). *Media och klimatförändringen*. *Westander Publicitet & Påverkan*. Stockholm, Sweden.
Whitmarsh, L., & Lorenzoni, I. (2010). Perceptions, behaviour and communication of climate change. *Wiley Interdisciplinary Reviews: Climate Change*, *1*(April), 158–161. doi:10.1002/wcc.7
Wright, W., & Reid, T. (2011). Green dreams or pipe dreams?: Media framing of the U.S. biofuels movement. *Biomass and Bioenergy*, *35*(4), 1390–1399. doi:10.1016/j.biombioe.2010.07.020

Tack till...

Utan hjälp och vägledning hade denna licentiatuppsats inte varit möjlig. Först och främst vill jag tacka mina handledare: Daniela Kleinschmit; för att du uppmuntrade mig till att söka och för att du ständigt skapar diskussion kring min text och mina val, Karin Beland Lindahl; för att du uppmanar mig till att fokusera på Frågan och att se till bidraget bortom det specifika projektet, Jan-Erik Nylund; för ditt stöd och för att du gav mig möjlighet att påbörja forskarstudier.

Utan en arbetsgemenskap hade mitt jobb varit ensamt. Jag vill därför tacka kollegor på institutionen på skogens produkter för ert sällskap.

Utan Sara Holmgren och Peter Edwards hade jag gått miste om relevanta och intressanta diskussioner och kommentarer. Tack Peter för att du granskat både språk och innehåll i mina texter. Tack Sara för att du läst och kommenterat på utkast i olika former och skick.

Utanför skogspolicyenheten har Malin Ander och Christer Karlsson särskilt bidragit med råd och tips kring forskarstudier. Tack för att ni tagit er tid.

Utan finansiering hade mitt arbete inte varit möjligt. Därför vill jag tacka Future Forests som finaniserat projektet. Tack.

Utan hjälp från Rolf Segerstedt, Klas Sjöland, Staffan Bengtsson och Dan Birgersson hade jag inte haft något material att analysera. Tack för att ni gett mig tillgång till era respektive tidningars e-arkiv.

Vidare vill jag tacka mina föräldrar och Malla för stöd. Ett särskilt tack till Sophie & Beau, Maria, Ania och Eve för er omtanke och extrahjälp de senaste två åren. Sist men inte minst: Tack Marc, Otto och Esther - jag har tur som får vara med er.

Denna bok är tillägnad minnet av mina vänner Ebba och Margit.

Distribution
Sveriges lantbruksuniversitet
Institutionen för skogens produkter
Department of Forest Products
Box 7008
SE-750 07 Uppsala, Sweden
Tfn. +46 (0) 18 67 10 00
Fax: + 46 (0) 18 67 34 90
E-mail: sprod@slu.se

Ansvarig utgivare
Publisher
Professor Geoffrey Daniel

MILJÖMÄRKT TRYCKSAK
341 051