EUROPEAN FOREST INSTITUTE
CENTRAL-EAST AND SOUTH-EAST EUROPEAN
REGIONAL OFFICE – EFICEEC-EFISEE

Forest Land Ownership Change in Norway

COST Action FP1201 FACESMAP Country Report

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EUROPEAN COOPERATION
IN SCIENCE AND TECHNOLOGY

COST Action FP1201
Forest Land Ownership Change in Europe:
Significance for Management and Policy
(FACESMAP)

Forest Land Ownership Change in Norway

COST Action FP1201 FACESMAP Country Report

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The COST Action FP1201 FACESMAP Country Reports are edited by the European Forest Institute Central-East and South-East European Regional Office (EFICEEC-EFISEE) at the University of Natural Resources and Life Sciences, Vienna (BOKU). The Country Reports are not subject to external peer review. The responsibility for the contents of the Country Reports lies solely with the country author teams. Comments and critique by readers are highly appreciated.
The main parts of these Country Reports will be included in the upcoming EFICEEC-EFISEE Research Report "Forest Land Ownership Change in Europe. COST Action FP1201 FACESMAP Country Reports, Joint Volume", published online on the FACESMAP (http://facesmap.boku.ac.at) and EFICEEC-EFISEE (www.eficeec.efi.int) websites.

Reference:

Follo G., Nybakk E., Barstad J., Talbot B. (2015) Forest Land Ownership Change in Norway. COST Action FP1201 FACESMAP Country Report, European Forest Institute Central-East and South-East European Regional Office, Vienna. 43 pages. [Online publication]

Published by:

European Forest Institute Central-East and South-East European Regional Office
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Papers published in this series can be downloaded in PDF-format from:
http://facesmap.boku.ac.at/library/countryreports

Cover: F. Aggestam Layout: S. Zivojinovic

COST is supported by the EU Framework Programme Horizon 2020

COST (European Cooperation in Science and Technology) is a pan-European intergovernmental organisation allowing scientists, engineers and scholars to jointly develop their ideas and initiatives across all scientific disciplines. It does so by funding science and technology networks called COST Actions, which give impetus to research, careers and innovation.

Overall, COST Actions help coordinate nationally funded research activities throughout Europe. COST ensures that less research-intensive countries gain better access to European knowledge hubs, which also allows for their integration in the European Research Area.

By promoting trans-disciplinary, original approaches and topics, addressing societal questions, COST enables breakthrough scientific and technological developments leading to new concepts and products. It thereby contributes to strengthening Europe's research and innovation capacities.

COST is implemented through the COST Association, an international not-for-profit association under Belgian law, whose members are the COST Member Countries.

Background of the project

Forest ownership is changing across Europe. In some areas a growing number of so-called "new" forest owners hold only small parcels, have no agricultural or forestry knowledge and no capacity or interest to manage their forests, while in others new community and private owners are bringing fresh interest and new objectives to woodland management. This is the outcome of various societal and political developments, including structural changes to agriculture, changes in lifestyles, as well as restitution, privatization and decentralization policies. The interactions between ownership type, actual or appropriate forest management approaches, and policy, are of fundamental importance in understanding and shaping forestry, but represent an often neglected research area.

The European COST Action FP1201 FOREST LAND OWNERSHIP CHANGES IN EUROPE: SIGNIFICANCE FOR MANAGEMENT AND POLICY (FACESMAP) aims to bring together the state-of-knowledge in this field across Europe and can build on expertise from 30 participating countries. Drawing on an evidence review across these countries, the objectives of the Action are as follows:

(1) To analyse attitudes and constraints of different forest owner types in Europe and the ongoing changes (outputs: literature survey, meta-analyses and maps).
(2) To explore innovative management approaches for new forest owner types (outputs: case studies, critical assessment).
(3) To study effective policy instruments with a comparative analysis approach (outputs: literature survey, case studies, policy analyses).
(4) To draw conclusions and recommendations for forest-related policies, forest management practice, further education and future research.

Part of the work of the COST Action is the collection of data into country reports. These are written following prepared guidelines and to a common structure in order to allow comparisons across the countries. They also stand by themselves, giving a comprehensive account on the state of knowledge on forest ownership changes in each country.

The common work in all countries comprises of a collection of quantitative data as well as qualitative description of relevant issues. The COUNTRY REPORTS of the COST Action serve the following purposes:

- Give an overview of forest ownership structures and respective changes in each country and insight on specific issues in the countries;
- Provide data for some of the central outputs that are planned in the Action, including the literature reviews;
- Provide information for further work in the Action, including sub-groups on specific topics.

A specific focus of the COST Action is on new forest owner types. It is not so much about "new forest owners" in the sense of owners who have only recently acquired their forest, but the interest is rather on new types of ownership – owners with non-traditional goals of ownership and methods of management. For the purpose of the Action, a broad definition of "new forest owner types" was chosen. In a broad understanding of new or non-traditional forest ownership we include several characteristics as possible determinants of new forest owners. The following groups may all be determined to be new forest owners:

(1) individuals or organizations that previously have not owned forest land,
(2) traditional forest owner categories who have changed motives, or introduced new goals and/or management practices for their forests,
(3) transformed public ownership categories (e.g., through privatisation, contracting out forest management, transfer to municipalities, etc.), and
(4) new legal forms of ownership in the countries (e.g. new common property regimes, community ownership), both for private and state land.

This embraces all relevant phenomena of changing forest ownership, including urban, absentee, and non-traditional or non-farm owners as well as investments of forest funds or ownership by new community initiatives, etc. Although the COST Action wants to grasp all kinds of ownership changes it has to be noted that the special interest lies on non-state forms of ownership.

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Acronyms and abbreviations

CPR	Common property regime
FAO	Food and Agriculture Organization of the United Nations
FMP	Forest management planning
FRA	Global Forest Resources Assessment
FRA2010	Global Forest Resources Assessment 2010
FRA2015	Global Forest Resources Assessment 2015
FSC	Forest Stewardship Council
NGO	Non-governmental organization
NOK	Norwegian krone
OED	Oxford English Dictionary
PEFC	Programme for the Endorsement of Forest Certification

1. Introduction

Author of chapter 1: Gro Follo

1.1. Forests, forest ownership and forest management in Norway

Information on the Norwegian forest and forestry is mostly based on Tomter and Dalen's (2014) report "Bærekraftig skogbruk i Norge" (that is "Sustainably forestry in Norway"), which was prepared by the Norwegian Forest and Landscape Institute as an assignment from the Norwegian Government. The report is based on a compilation of different data sources for example from the Norwegian Forest and Landscape Institute, Norwegian Agriculture Agency and Statistics Norway. The report has several chapters written by different authors. However, in our presentation here we will only present the relevant pages.

The forest

Norway has approximately 14 million hectares forests or other wooded land, which is 43% of the Norwegian land area. The forests in Norway are managed as small-scale forestry. This is partly due to varying topography, different production conditions and the ownership structure (*op.cit* page 23).

Of the total forest area 58% is conifer dominated, the remaining 42% is deciduous dominated. The proportion of coniferous forest is somewhat higher for the productive forest areas (65%). There are considerably more coniferous forests than deciduous forests in Southern and Eastern Norway and Trøndelag, while the deciduous forests are prevalent in Northern Norway. In Western Norway, coniferous and deciduous forests are evenly divided (*op.cit* page 44). The predominant tree species are spruce (*Picea abies*), pine (*Pinus sylvestris*) and downy birch (*Betula pubescens*), comprising over 90% of the standing volume (*op.cit* page 116).

In 2010, the standing volume was measured to 907 million m^3 (under bark) and this is the highest volume measured since registrations started almost 100 years ago (*op.cit* page 48-49). Spruce makes up the largest volume, then pine and next hardwood. This was the situation almost 100 years ago, and it remains the same now (*op.cit* page 50). The annual net growth for all forests in Norway during the period 2008-2012 was 24 million cubic meters. At the same time, the average harvesting rate was 11.1 million m^3 per year. Since 1950, harvesting has been substantially lower than the yearly increment. This has resulted in a continuous increase in standing volume, and now the increase per year is 12.9 million m^3 (*op.cit* page 70). The increment peaked in 2001-2005, since then there has been a slight decline (*op.cit* page 71). The forest in Norway is becoming steadily older and the proportion of trees with a diameter over 30 centimetres has almost quadrupled since the 1920s (*op.cit* page 52). Approximately 16% of the productive forest area is over 120 years old, and about 24% is 81 to 120 years (*op.cit* page 53).

The total amount of dead wood in productive forests in Norway was estimated at just over 90 million m^3 in 2010, that represents approximately 12 m^3 per hectare. Annually, there is an increase in the amount of dead wood by about 3%. The conclusion is that the amount of dead wood has been increasing over the last 90 years, and the assumption is that the increase will continue in the future (*op.cit* page 86).

In Norway, there are three schemes of area protection relating to forest. The strictest form is nature reserves, national parks have a weaker form of area protection, and landscape conservation areas have the least strict protection system. Of the total forest area in Norway, 6.1% is within one of the three schemes. For nature reserves and national parks only, the percentage is 4.1. Regarding productive forests, the percentages are respectively 4.3 for all three categories and 2.8 for the two strictest ones (*op.cit* page 101). Since 2003, Norway has had a voluntary forest protection scheme. Under this scheme forest owners and their organizations find areas that meet the criteria for protection, and the forest owners offer the state to protect their own forest lands provided a satisfactory economic

compensation. Since 2003, almost all of the new processes for forest conservation on private land are carried out as voluntary protection (*op.cit* page 102). Please be aware that we in Norway also use the term "protection forests" (Norwegian term: "Vernskog"), and that this is something else than protected forests. A protection forest serves to protect other forests or is a protection against natural disasters. A protection forest is also the forest line towards the mountain and near the coast, where the forest is fragile and can be damaged by wrong forest management. This kind of forests must therefore be managed in a special way, which is regulated under the Forestry Act. There is no broad, updated overview of the protection forest area in the country, but an older overview indicates that it constitutes approximately one third of the total forest area (*op.cit* page 104).

With regard to emissions and uptake of greenhouse gases in the forest, in 2011 there was a net uptake in forests of 32.4 million tons of CO_2 equivalents, while in the same year the total greenhouse gas emissions in Norway was 53.4 million tons. Net uptake in forests is thus equal to 60% of the total greenhouse gas emissions in Norway (*op.cit* page 58).

Forestry

A major reason for the increase in standing volume mentioned above, is the afforestation that took place from the middle of the 1900s. In Norway afforestation is referred to as those areas along the coast that is planted with tree species that normally give a higher production at the site than originally, or as planting where there has not been forest before. Afforestation activity started in the 1950s and reached its peak in the 1960s and 1970s, with over 14 000 hectares of planted area annually. Up to the 2000s the afforestation decreased considerably and currently comes to only a few hundred hectares per year. However, in recent years there has been a slight increase in afforestation activities (*op.cit* page 120). The accumulated afforested area represents nearly 390 000 hectares or 4.5% of the productive forest area. Around 60% of the afforested area is located in afforestation areas in Western Norway, while the remaining 40% is in Northern Norway (*op.cit* page 121). It is estimated that approximately 80 000 hectares are planted with introduced (non-native) species. Of these, Sitka spruce (*Picea sitchensis*) constitutes approximately 50 000 hectares (*op.cit* page 122). The introduced species represent a volume of approximately 10 million cubic meters, that is equivalent to about 1% of total timber volume (*op.cit* page 125). The planting of introduced species is now regulated by a directive authorized in the Nature Diversity Act: "Regulation on planting of non-native tree species for forestry purposes".

Forest management planning in Norway aims to survey the forest areas where active forestry (production for commercial use) is going to take place. In total during the period from 2001 to 2012, forest management plans was completed for 3.7 million hectares of productive forest area for a total of 61 000 properties. Forest management plans for additional 1.5 million hectares are in the making. The product the forest owners buy is a forest management plan with tables and maps that provide an overview of forest resources and environmental values. The forest management planning is supported by state subsidies for forest owners (*op.cit* page 155). Forest management planning is a large-scale process and often involves larger regional areas and many actors (both public and private). A forest management plan project takes 2-4 years to complete, from planning and start-up until the final plan is delivered to the forest owners (*op.cit* page 156).

Logging and regeneration are subject to constraints and guidelines, for example those given in the "Regulations on sustainable forestry" under the Forestry Act (*op.cit* page 90). In addition, there is a special requirement in the Norwegian PEFC forest standard regarding the use of retention harvest (Norwegian term: "Lukket hogst") (*op.cit* page 91). In 2012, clear-cutting represented 65.5% and seed tree stand felling 21.7% of the total harvesting and regeneration area. In the same year retention harvest, i.e. shelterwood felling, small-scale clear-cutting, edge cutting, selection harvest, mountain selection system, comprised 12.2% of the total harvesting and regeneration area. (The mentioned English terms include the Norwegian terms: Skjermstillingshogst, småflatehogst,

kanthogst, bledning, selektiv hogst og fjellskoghogst.) The choice of harvesting methods has been stable during the entire period from 1994 to 2011 (*op.cit* page 92). As required by the "Regulations on sustainable forestry", after harvesting the forest owner must ensure that regeneration occurs, and make sure that harvesting method and method of regeneration are in accordance with each other. Depending on local conditions, this could involve natural regeneration (via forest seed dispersal). In 2003, state subsidies for planting was removed, and after this less was planted than recommended. Even though subsidies for planting have been reintroduced in parts of the country, this has had a limited effect (*op.cit* page 63). According to the "Regulations on forest management plans with environmental inventories" and "Regulations on sustainable forestry", harvesting can normally only occur in areas where environmental inventories is done in advance. If not, the precautionary measures embodied in the Norwegian PEFC forest standard are the basis (*op.cit* page 92-93).

The proportion of harvesting and regeneration area covered by environmental inventories has increased in recent years. In 2012, this was 85.5%, while precautionary measures were the basis for 9.0% of the area. Areas that lack environmental inventories and where precautionary measures used in connection with harvesting were not added, was 2.1%. The situation is reported to be unknown for 3.5% of the harvesting and regeneration areas (*op.cit* page 93). Environmental Inventories in Forests (Norwegian: "Miljøregistering i skog"/"MiS") began in 2001 and since then about 100 000 environmental features have been mapped over the entire country (*op.cit* page 154).

There are two certification schemes for forests in Norway: The Norwegian PEFC forest standard (Programme for the Endorsement of Forest Certification) and the FSC (Forest Stewardship Council). Practically all of the forest properties with harvesting for sale after the year 2000 are covered by PEFC certification. Until now, this encompasses about 45 000 forest properties with total 6.5 million hectares of productive forest area. Approximately 200 forest properties are certified through both PEFC and FSC, and this forest area represents about 3% of the total certified forest area in Norway (*op.cit* page 149). The Norwegian PEFC forest standard includes 25 requirement sections. Certification by PEFC is essentially a type of group certification. Group certification means that the forest owners who sell timber are obliged, either through their own agreement or through timber contracts, to follow the forest standard. This obligation is bound to the management of the entire forest property and not the single harvest only (*op.cit* page 150). All major purchasers of timber in Norway require certification today. Certification means continuous improvement. Through internal audits and external audits conducted by an independent third party (a certification company), any deviations are to be identified and closed (*op.cit* page 152).

During the period of 2003-2012 tending of young stands (mechanical supplementary work, spraying, juvenile spacing / precommercial thinning) was done on a little bit less than 0.27 million hectares. In seven of these ten years, this area was between 27 000 and 31 000 hectares. Most young forest tending takes place in the traditional forestry counties in Eastern Norway and Trøndelag. In total, a little above 2% of the tended young tree area is sprayed (*op.cit* page 67).

There were barely 5 500 people employed in forestry in Norway in 2011, of which 17% were women. Slightly more than half of them were employees, while the rest were self-employed. In 1952, there were over 30 000 persons who had their daily work in forestry. Afterward, the number decreased rapidly and then stabilized at the start of the 1970s. After a slight decrease until the bottom was reached in 2003, the number of persons employed in forestry increased again (*op.cit* page 193).

Later in the country report we will give information on forest properties, forest owners and types of forest owners. Then we will mention the huge differences between the various Norwegian counties when it comes to forest and forestry. Here we want to add that these differences are manifested both in timber prices and forest owners organized in forest owners' organizations. For instance, in October 2014 the mean price for each m^3 saw timber spruce was 497NOK in Hedmark county, while the price in Troms county was

290NOK (Norsk Skogbruk, 2014). All the other counties' prices laid in between with the coastal counties (with the afforested area) at the lower end.

When it comes to forest owners' organizations, there are two options for the forest owners: To organize in Norskog or The Norwegian Forest Owners' Federation. Norskog is known as the organization for mainly huge forest owners, and had in 2010 230 members who owned about 700 000 hectares productive forest area (regjeringen.no, 2010). In average that is approximately 3 040 hectares productive forest area each estate – a far cry from other Norwegian averages. When all forest owner categories are included, and with figures from 2010, the average was 5.7 hectares productive forest area each forest estate. When only the estates owned by personal forest owners are included, the average size in 2010 was a little bit less than 4.5 hectares (Rognstad and Steinset, 2012). The Norwegian Forest Owners' Federation publishes each year figures for forest owners organized, and in 2013 the number was 35 770 (Norwegian Forest Owners' Federation, 2014a). The last years there has been a slight decrease in owners organized in the Federation, in 2009 they had 38 792 owners organized (Norwegian Forest Owners' Federation, 2011). It is possible to calculate the organization percent among the personal forest owners. In 2009 maximum 54% of all Norwegian personal forest owners with 10 hectares or more productive forest joined forest owners' organizations. The figures for counties along the coast were much lower. Except for Finnmark county which is very special in terms of ownership (see later on in the report), Troms county had the smallest maximum percentage (4%). Other afforested counties more south had higher maximum percentages: For instance Møre and Romsdal county had maximum 28% organized, Sogn and Fjordane county had maximum 31% organized (Follo, 2011a). When calculating this Follo took precautions, and the real figures are probably smaller.

1.2. Overview of the country report

The country report starts with a presentation of the Norwegian forest and forestry mostly based on Tomter and Dalen's (2014) publication on sustainable forestry in Norway. Their publication is 241 pages long and notifies on more or less all forest/ry dimensions and aspects. Due to the scope of Tomter and Dalen (2014) it has been a challenge to choose what to include in the country report's chapter 1, Introduction. Its author, Gro Follo, has tried to select the information presumed to be of highest interest for the readers of the country report. Chapter 2 and chapter 3 are rather short. While Follo in chapter 2 mentions the methods applied in data collection for the Norwegian country report, she in chapter 3 summarizes some results from the literature review and its most relevant publications presented in the Annex. The detailed descriptions in the Annex is written by Follo, Erlend Nybakk and Johan Barstad. The longest chapter in the country report is chapter 4 on forest ownership, mainly written by Follo. The readers may find the information given at a very detailed level, but Follo has meant it necessary. For instance, there is no short, accurate way to describe the legal restrictions for buying and selling forests, and it takes its time to tell how Norway ends up with huge outfields without clearly defined owners. Chapter 5 on forest management approaches for new forest owner types, is written by Nybakk and Bruce Talbot. Barstad is the author of the sixth chapter, and he presents his viewpoint on polices influencing ownership development and policy instruments for new forest owners. The seventh and last chapter is termed "Literature". It includes all the references applied in the country report's text, but also additional literature from the literature review on forest ownership in change (see chapter 3).

2. Methods

Author of chapter 2: Gro Follo

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

In the data collection for the Norwegian country report we have applied:

1. Literature reviews to answer qualitative data and give overview assessments
2. Statistical data
3. Data from previous national or regional studies
4. Our own expert knowledge.

The literature, statistical data and data from previous national or regional studies applied is data/information/publications already known to us. Norway is a small country with very few researches doing research on the country's forest, forestry and forest owners. Further, Norway has several webpages and email-based information networks relevant for forest, forestry and forest owners, which in effect means that it is rather difficult to miss any scientific publication. Due to limited time resources, we have not done any expert interviews or consultation. We have not applied grey literature.

3. Literature review on forest ownership in change

Author of chapter 3: Gro Follo.

The detailed descriptions in the Annex is written by Gro Follo, Erlend Nybakk and Johan Barstad.

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These references are listed at the end of the report. The 10 detailed descriptions of publications are found in the Annex. The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

Even if the Norwegian research on Norwegian forestry and forest owners is modest compared for instance with the amount of such research going on in Sweden and Finland, both research framework and research approaches are rather diverse. This is reflected in the Annex' presentation of the eight publications. If "research framework" is understood as theoretical approaches including disciplines, we see from the tables in the Annex the following approaches: Anthropology, sociology, gender perspective, economics, communicative planning, political science, innovation management and entrepreneur-ship. If "research approaches" is understood as methods applied, the tables in the Annex reveal even more heterogeneity. From the eight mentioned publications we recognize a broad range of social science methods: Fieldwork, qualitative interviews, focus group interviews, questionnaire survey (mail survey), document analysis, trailing research (formative dialogue research), statistics and panel data. From the Annex we also see that it is rather common for Norwegian researchers on forestry and forest owners to mix methods.

3.2. New forest ownership types

There is not much literature in Norway (on Norway) telling the differences between the "new" and "old" forest owners, that is what the differences between them are. Further, there is not much literature presenting results from forest owners all over the country.

3.3. Forest management approaches

A large part of the work in personal owned forests in Norway is now done via forest contractor companies often organised via forest owner associations. Short term contracts are normally used, but some of the timber brokers have started up buying standing trees. Then the forest owner know the price before harvesting and does not need to be involved in the harvesting process. Because new forest owners often have less forestry competence, this can be additional advantageous for them. What's more, the technical / technological developments available in Norway offer the forest owners

several options for “remote management”. This includes web-based solution for procuring services, online marketing, sales and settling contracts, and also remote viewing of operations.

3.4. Policy change / policy instruments

In Norway there is not much ownership changes, and there is at the moment, broadly speaking, no policies aiming to influence ownership changes. Furthermore, there exist no policy instrument answering to the growing share of new forest owner types.

4. Forest ownership

Author of chapter 4: Gro Follo except one part. 4.4 "Changes of the forest ownership structure in last three decades" was a joint work with other authors.

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

In Norway the statistical way to approach the ownership question is to start with the area, not the owners. Further, Statistics Norway counts normally one owner for each estate (called "reference owner") even if there may be several owners to the estate. In addition Statistics Norway normally includes only estates with 2.5 hectares productive forest area or more. If a forest owner owns more than one forest estate in the same municipality, Statistics Norway counts this as one estate. Norway has per 2014 in total 428 municipalities in 19 counties, and almost 4/5 of personal forest owners' forest is located in the same county as the owner lives (Steinset in Tomter and Dalen, 2014: 208). In the last couple of years Statistics Norway has also published figures for joint owners (with the exception of joint ownership between spouses). These ways of establishing the figures give that there is no one-to-one relationship between the statistic's number of estates and number of owners, nor between owners in the statistics and owners in national property register.

In the last decennium there has been changes in the way Statistics Norway establishes their figures. Including 2010, the statistics comprised all properties in the Farm Register of the Norwegian Agricultural Authority with at least 2.5 hectares of productive forest area. In the period before 2010 it was also an improvement in the Farm Register regarding the information put into it. From 2011 the number of forest properties and productive forest area are based on new cartographic data analyses and data on owners and properties from the cadastre in combination with data from the Farm Register (Statistics Norway, 2013a). These changes have effected that the number of estates has fluctuated down and up since around the year 2000, and at the moment the numbers of estates are increasing (Tomter and Lågbu in Tomter and Dalen, 2014: 203). Given this changes it is important to pay much attention to the year the statistics are from.

Norwegian forest and forest owners statistics are regarded as correct and highly reliable. The statistics, registration and the considerations underpinning the data are public and transparent. We have no reason to raise critical concerns on the statistics or the registrations it is based upon. Another matter is that we may want more figures published, but we also know from personal communications over years with persons responsible for the relevant statistics in Statistics Norway that this depends on economic resources and prioritising from important institutions and organizations in the forest(ry) sector.

Table 1: Number of forest estates in 2011 with 2.5 hectares productive forest area or more, after forest owner categories, in total and in three counties of particular interest (after Steinset in Tomter and Dalen, 2014: 209)

Area	In total	Personal forest owners (reference owner)		Un-personal forest owners	Un-identified or dead
		Male	Female		
Norway	131 785	86 845	29 157	1 951	13 832
Hedmark	11 132	7 349	2 676	175	932
Hordaland	10 606	6 977	2 177	102	1 350
North-Trøndelag	6 746	4 816	1 338	118	474

There are rather huge differences among the Norwegian 19 counties when it comes to forest and forestry. In table 1 this is illustrated by three counties. Hedmark county is the main county for forestry in Norway, and in the last 10-year period 63% of the county's properties had cut timber for sale (Statistics Norway, 2013b). Hordaland county is part of the area afforested after the Second World War with the implications that will have for forestry culture and tradition, forestry knowledge etc. However, the county have almost as many forest estates as Hedmark. North-Trøndelag county, as Hedmark county, is a traditional forestry area but with a lesser number of forest estates. The two counties have rather different natural conditions for forest and forestry activities since North-Trøndelag is localized further north and near the ocean. At the moment (2014) North-Trøndelag county is in a regional timber market (saw mill and pulp) demanding more local timber, while Hedmark is in a timber market region with surplus exporting sawtimber and pulpwood.

As recognized in table 1 Statistics Norway makes an important distinction between "personal forest owners" and "un-personal forest owners". "A personal forest owner" owns the forest area as a living human being, in flesh and blood, and is in official international reporting from Norway termed "owned by individuals". This is physical persons. "Un-personal forest owners" are the state, municipalities, limited companies, foundations, etc., that is units that are not humans in flesh and blood – and which do not have gender/sex or are able to be dead. This is juridical persons. In the statistics in table 1, the category of un-personal forest owners (juridical persons) does not include estates of deceased persons. These estates are included in the third category applied in table 1, "Un-identified or dead". The dead ones come from the category "personal forest owners". When the estates of deceased persons are bought (by personal or an un-personal buyer, on the open market or not), the estates are again included in the correct category. The third category also includes the phrase "un-identified". There may be several reasons for this un-identified situation, and it may not be related to a situation where the ownership to a forest estate is undeclared or disputed. Rather, the difficulties with identifying the forest/forest owner may be caused by incomplete estate identification in the national property register (Norwegian: Matrikkelen). Another problem is forest owners without person identification (Tomter and Lågbu in Tomter and Dalen, 2014: 206). The distribution of respectively "dead" and "un-identified" in the category "Un-identified or dead" is, to our knowledge, most recently given in Rognstad and Steinset (2010: 137) with figures for 2008. At that time there was 119 614 forest estates in total, out of which 2 962 estates was in the category "dead" and 1 886 in the category "un-identified". This distribution, with more estates in the "dead" category than in the "un-identified" category, was also the situation in 2007 (Statistics Norway, 2008). There will always be some estates being owned by what is called "dødsbo" in Norwegian, but for forestry activities it may be a problem if the estates stay in this in-between situation (see for instance Follo, 2011b). There is done very little research in Norway on estates owned by deceased persons, but we have two hypotheses: 1) The relative numbers (relative to forest estates in total in the county) of estates owned by deceased persons will be higher in counties without an active forestry industry than in counties with active forestry industry. We assume this is reflected in the relatively high number of "un-identified or dead" in table 1 for Hordaland county. 2) The

numbers of estates owned by deceased persons will increase in the future.

In table 1 we presented the figures as Statistics Norway usually presents them – with focus on forest estates with 2.5 hectares productive forest area or more. It is not common to include information on the un-productive forest area and/or the total forest area. In table 2, however, both un-productive area and total forest area are added, and the forest estates in question are 0.5 hectare forest area or more.

Table 2: Productive, un-productive and total forest area in 1 000 hectares for forest estates with 0.5 hectare forest area or more, after forest owner categories in 2012 (after Tomter and Lågbu in Tomter and Dalen, 2014: 201)

Forest owner category, in Norway	Forest owner category, in FRA2015	Productive forest area	Un-productive forest area	Forest area in total
Personal forest owner	Individual forest owner	5 668	2 284	7 952
Other private owners	Private business entities and institutions	267	96	363
Parish common ("Bygdeallmenning")	Local, tribal and indigenous communities	181	40	221
The Finnmark Estate ("Finnmarkseiendommen")		59	1 047	1 106
Municipality and County Council	State at the sub-national scale	218	56	274
The state	The state at national scale	633	580	1 214
Not specified/other	Unknown ownership	28	29	56
In total	**Total**	**7 055**	**4 132**	**11 186**

In the table we have changed the original figures given in decare to hectare and then to 1 000 hectares. This effects that summarizing vertically and horizontally do not necessary give the figures "In total" or "Forest area in total".

The "translation" from categories in Norway to forest owner categories in FRA2015 is done based on personal communication with Tomter 9 September 2014. Tomter is one of the three persons in Norway who prepared the FRA2015 information.

In Tomter and Dalen (2014) The Finnmark Estate is categorized as a separate forest owner category. The Finnmark Act from 2005 transferred about 95% of the total area of Finnmark county to the county's residents. In FRA2015 The Finnmark Estate is regarded as owned by local, tribal and indigenous communities.

"The state" includes here the State commons (Tomter, personal communication 9 September 2014). We do not know how much the State commons constitute of the total area that is included in the state as owner.

Figures on forest owners are another matter than figures for forest estates. In 2011 there were 10 358 forest estates owned in joint ownership by 33 403 personal forest owners (see table 3). The figures in table 3 and table 1 are both from 2011, and we may explicate the difference between a statistic based on estates-with-one-reference-owner and a statistic presenting number of owners. All the 10 358 forest estates in Norway with joint ownership (table 3) are included once in table 1's estates with a male reference owner (86 845 estates) and a female reference owner (29 157) – in total 116 002 estates / reference owners. When counting forest owners we will, however, end up with 23 045 owners more (33 403 minus 10 358), in total 139 047 personal forest owners.

Table 3: Forest estates owned by personal forest owners in joint ownership, number of owners and average number of owners each estate, for Norway and some counties, 2011 (after Steinset in Tomter and Dalen, 2014: 208-209)

Area	Forest estates in joint ownership	Numbers of forest owners	Average number of owners each estate
Norway	10 358	33 403	3.2
Hedmark	877	2 379	2.7
Hordaland	749	2 429	3.2
North-Trøndelag	350	1 070	3.1

The forest estates included are forest estates with 2.5 hectares productive forest area or more.

Joint ownership among spouses is not included as joint ownership in the table.

Across the different counties in Norway the average numbers of joint owners per estate vary. None of the three counties included in table 3 have higher number of owners than the country average, but others have. For instance the urbanized counties of Oslo

(where the capitol is located) and Akershus, have 3.8 forest owners per joint owned forest estate.

If we compare some of the figures from table 3 and table 1, we will recognize that the counties differ when it comes to the part of the county's total amount of forest estates owned by personal forest owner that is owned in joint ownership. Out of Hedmark's estates owned by personal forest owners (7 349 + 2 676) 877 estates are jointly owned, that is 8.7%. For Hordaland county 8.2% is, but for the county of North-Trøndelag the part is down to 5.7%. (For Norway in total 8.9% of the personal owned forest estates are owned jointly.)

To our knowledge there is not done research on the regional variations manifested by the counties' different average number of owners on each jointly owned forest estates or the different per cent of total personal owned forest estate owned jointly.

4.1.2. Critical comparison with national data in FRA reporting

The figures in table 2 for forest area in total is possible to recognize in the national data (table 4) already sent to the Global Forest Resources Assessment (FRA).

Table 4: Norwegian figures to FRA2010 from 2005 (FAO, 2010) and FRA2015 from 2012, forest area, after FRA's ownership categories

FRA 2010 Categories	Forest area (1 000 ha) 2005	Forest area (1 000 ha) 2012
Public ownership	1 362	1 488
Private ownership	8 321	9 642
…of which owned by individuals	7 436	7 952
…of which owned by private business entities and institutions	646	363
…of which owned by local communities	239	1 327
…of which owned by indigenous/tribal communities	0	
Other types of ownership	0	
(2015: Unknown ownership)		972
TOTAL	**9 683**	**12 102**

Figures for FRA2015: Tomter, personal communication 9 September 2014.

When comparing the figures from table 2 and table 4's figures for FRA2015, we see that the figure for "Public ownership" for FRA2015 is exactly the same as the figures in table 2 when we sum up the total forest area owned by "The state" and "Municipality and County Council" (1 488). In table 4 the category "Private ownership of which owned by local communities" and the category "Private ownership of which owned by indigenous/tribal communities" are merged, and ends up with 1 327 000 hectares. This is exactly the same figure as in table 2 when merging the category "Parish common" and "The Finnmark Estate".

What is not identical in table 2 and table 4 is the figures for "Not specified/other" and "Unknown ownership", and the nation's total forest area. As said in connection with table 1, an un-identified/unknown ownership situation may not be related to a situation where the ownership to a forest estate is undeclared or disputed. In addition to our earlier elaboration on this issue, we will point out that there also may be discrepancy between the forest area assed by the National Forest Inventory (done by Norwegian Forest and Landscape Institute) and the public registers that Statistics Norway bases much of their information on. Supplement this with the possibility that "un-identified/unknown ownership" may be a kind of rest category that has to submit to other numbers in the overall context (the table, the tables in a report, the context the report is a part of, etc.) (Tomter, personal communication 9 September 2014), the figures presented may differ.

As we have shown, there is a clear link between the national data presented in table 2 and the data collected for the FRA2015 (in table 4). In our understanding the FRA figures adequately present the situation in Norway, and there is no special difficulties or ambiguities worth mentioning here regarding the translation from the national data to the scheme used in the FRA2015.

4.2. Unclear or disputed forest ownership

In Norway there are huge outfield estates without clearly defined owners (Lågbu et al., 2012; Forsberg Mathiesen et al., 2013). The Norwegian outfields consist of much bare land, bogs, unproductive forest area, water and glaciers. In counties with much outfield areas information on both estate borders and ownership is often of poorer quality than in areas with much agricultural land and productive forest area. Historically the reason for this is that the mappings have taken place mainly in what they at that time understood as economically valuable agricultural and forest area and in highly populated areas (Forsberg Mathiesen et al., 2013: 2). In 2009 Statistics Norway in cooperation with Norwegian Forest and Landscape Institute started a work to strengthen the general knowledge about Norwegian properties with predominantly uncultivated land. The work was requested by the Ministry of Agriculture and Food (Forsberg Mathiesen et al., 2013: ii).

In their work Statistics Norway and Norwegian Forest and Landscape Institute had to combine information from maps and different kinds of registers. This implies that the term "without clearly defined owners" also has to be understood as a register based and statistically established term. In effect this means for instance that an estate's border and ownership may be well known in real life, but the information is not available in easy accessed registers or perhaps is fallen outside the categories applied in registers/statistics (see Lågbu et al., 2012: 4-6).

In both Lågbu et al. (2012) and Forsberg Mathiesen et al. (2013) Statistics Norway and Norwegian Forest and Landscape Institute established an analysis dataset where each unite either belongs to the category "Estates with clearly defined owner" (Norwegian: "Eiendommer med klart definert eier") or the category "other strips of field" (Norwegian: "Enkeltteiger forøvrig") founded on codes for ownership in the Norwegian Cadaster (Norwegian: Matrikkelen). The category "Estates with clearly defined owner" includes estates with one Cadaster unit or many Cadaster unites with the same owner. The category "Other strips of field" includes all the other estates in the analysis dataset (Lågbu et al., 2012: iii). When the estates included was estates with at least 0.5 hectare total area, the area falling into the category "Other strips of field" contained 7 183 650 hectares total area out of which 792 930 hectares was productive forest area (Lågbu et al., 2012: 15, table 6a). When the estates included was properties exceeding 100 hectares total area which have no affiliation with the national Farm Register, 4 581 820 hectares of total area was falling into the category "Other strips of field" out of which 167 210 hectares was productive forest area (Forsberg Mathiesen et al., 2013: 18, table 7a).

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

There are legal restrictions for selling/buying forest in Norway. Together provisions in the Concession Act (Norwegian: Konsesjonsloven), the Allodial Act (Norwegian: Odelsloven) and the Land Act (Norwegian: Jordloven) give important framework for what the specific owner is allowed to do with the property.

The purpose of the Consession Act:

> is to regulate and control the sale of real property in order to achieve an effective protection of agricultural production areas and such conditions of ownership and utilization as are most beneficial to society […]. (Government.no, no date: 2)

With the exceptions ensuing from the Concession Act, real property may not be acquired without the permission of the King, that is concession. The act's §2 on instruments, reads that "[t]he authority of the King may be delegated to the municipalities". As Flemsæter and Setten (2009) elaborates:

> For agricultural properties, the Concession Act states that all owners of farms over a certain size have to acquire concession, that is, prices of these properties are controlled and regulated in order to avoid speculation, and owners are obliged to live on the property and to farm the cultivated land. (Flemsæter and Setten, 2009: 2268)

Exceptions from concession may be based on the character of the property. For instance, concessions is not necessary for the

acquisition of some undeveloped sites/areas or for built-on properties not exceeding 10 hectares, where not more than 2.5 hectares of the area are fully cultivated. Further, exceptions from concession may be based on the character of the status of the acquirer. Concession is, for instance, not necessary when the acquirer is the state. The state may both buy and sell estates on a free market, and in the period 2011-2017 Statskog SF, the Norwegian state-owned land and forest enterprise, is selling scattered forest estates. The basic idea is to sell to the highest bidder, but Statskog reserves itself the right to accept or dismiss any bid (Statskog, 2014). Another exception from concession is in a situation where the acquirer has an allodial entitlement to the property (on the Allodial Act, see below). The exception for allodial entitlement is given with some qualifications. If the agricultural estate has an all-year residence, more than 2.5 hectares cultivated land or more than 50 hectares productive forest area, the dispensation from the concession is conditional upon the acquirer taking up residence on the property within one year and live there him-/herself for a minimum of five years (in Norwegian this obligation is termed "boplikt").

The Concession Act reads certain circumstances of relevance for whether a concession shall be granted, and there is given five circumstances for agricultural properties. For instance, special emphasis in favour of the applicant shall be placed on whether the agreed price provides for a socially justifiable price development (in Norwegian termed "priskontrollen"), and whether the acquirer's purposes will take into account the interests of settlements in the area.

The Allodial Act defines what kind of agricultural estates that is legally understood as allodial estates. The cultivated land has to be larger than 2.5 hectares or the productive forest area more than 50 hectares, and the owner has had full ownership for 20 years. In addition to the acquirer of the allodial rights (Norwegian: "Odleren") his/her children receive the rights if some of the parents has owned the whole estate with allodial rights or some of the grandparents is the last owner of the whole estate with allodial rights. The allodial rights is a kin right, juridical persons are not able to acquire allodial rights. Further, the rights is strictly personal, and the rights can neither be formally transferred to others nor really be exploited by others (Lilleholt, 2009). The Allodial Act privileges "blood ties over other relations" (Flemsæter and Setten, 2009: 2268), and blood ties is with the amendment to the law in 2013 (Ministry of Agriculture and Food, 2013a) restricted to the children/grandchildren and their line of successors. The eldest of the siblings with her/his line has the strongest right to buy the estate and goes before the younger siblings and their lines. The eldest one has first right to refusal, as Forbord and Johnsen (2004: 4) formulates the situation. The one of the siblings buying the estates has, according to the "Åsete" right included in the Allodial Act, right to acquire the land at a low price. The act states that the price shall be reasonable in the prevailing situation, and that the price shall emphasize the buyer's ability to own the estate in the future. (The "Åsete" right is a qualified right of inheritance of agricultural land.) When all the persons with allodial rights to the estates have refused to acquire the estate, the estate may be sold to others. In that case the estate is no longer an allodial estate until the new owner has owned it for 20 years.

An owner of an estate is not free to establish new properties by dividing the estate – for instance with the intention to sell the new property. Several laws out of which the Land Act is one regulate this (Lilleholt, 2009: 216). The Land Act's §12 states: "Property that is used or may be used for agriculture or forestry may not be divided without the consent of the Ministry." The Ministry may give its consent if, for instance, the division facilitates an expedient and varied use structure in agriculture.

In autumn 2014 there is a rather heated political and public debate in Norway on issues related to the Concession Act be it for agricultural land or forest area. The right wing government, the Solberg Government, came to power October 2013, and the Minister of Agriculture and Food, Listhaug from the Progress Party, started rather immediately to suggest changes to the agricultural sector (including forestry), a sector under her Ministry's responsibilities. In June 2014 the Government recommended the Storting (the

Norwegian Parliament) to remove the rules on price control in the Concession Act (Ministry of Agriculture and Food, 2014a). Before the recommendation was settled in the Norwegian Parliament, The Ministry of Agriculture and Food in October 2014 proposed to remove the entire Concession Act and the Allodial Act's rules regulating residence on the property. One argument given for this is that the Concession Act hinders an effective market for agricultural properties because the price control may reduce the prices and limit the seller's willingness to put the estate for sale on an open market (Ministry of Agriculture and Food, 2014b). The hearing's deadline is set to 15 January 2015.

The recommendation to remove the price control and the proposed removal of the entire Concession Act occurs at the same time as SKOG22 (i.e. FOREST22) works. SKOG22 is a group of forest industry actors (including forestry) and other relevant actors, a group first mentioned by the Stoltenberg Government, and then appointed by the new government in November 2013 (Ministry of Agriculture and Food, 2013b). The group's goal is until December 2014 to work out a broad and unifying strategy for research, development, innovation and knowledge dissemination in the forest based value chains (Innovation Norway, 2013). SKOG22 has four working groups, and the group termed "forest" is the one most relevant for the COST action FACESMAP. In autumn 2014 the working group's report drafts for hearing were published free for everyone to respond (Innovation Norway, no date). One of the recommended measures the working group understands as important, is to stimulate to a more dynamic property market (SKOG22, 2014). The need for this is contextualized in the report draft as an issue related to the Norwegian property structure: Is it problematic that Norway has so many and so small forest properties? The main idea seem to be that more forest properties for sale, the huger each property will end in the long run, and this will effect more forestry activities at the properties, more forestry engaged personal forest owners and reduced costs/increased income both for the forest owner and forest industry.

SKOG22 (2014) suggests several actions to obtain a more dynamic property market. Among them is to remove the price control when buying forest and to end the profit taxation when selling forest. In our understanding it seems reasonably that the Concession Act hampers a development towards an increased amount of forest estates at the property market. To our knowledge, however, there is no research substantiating the understanding. When it come to the profit taxation, this is a tax activated when selling a family owned estate out of the family. For comments see Norskog (2014) and Norwegian Forest Owners' Federation (2014b), the two organizations organizing Norwegian forest owners. In a study on agriculture and taxation in Norway, Andersen (2008) sums up in this tax matter:

> Up to 2004 customary farms and forestry's was sold with no taxation under the condition that the business had been owned for more than ten years. This was altered in 2005 so that people selling farms to others than family became liable to pay capital gain tax. This may lead to that elderly owners become less eager to sell their farm if no other family member wishes to buy it. (Andersen, 2008: 8)

The changes to the Tax Act suggested by the Ministry of Finance in 2004 said that the ten years rule should end for all agricultural and forest estates, but after the political debate the ten years rule was kept in the Tax Act for owners selling to family members (Standing Committee on Finance, 2004-2005). Andersen point to elderly owners, we want to add that a consequence of the tax rule may be that it gives forest owners economic incentive to keep the estate in the family in the next generation too – whether it is an allodial estate or not.

4.3.2. Specific inheritance (or marriage) rules applied to forests

For agricultural estates that is not allodial estates there is no special rules for inheritance. They follow the general Norwegian rules for inheritance.

For allodial estates, be it pure agriculture land, pure forest area, pure outfield areas or a

kind of combination, the implications of the Allodial Act regulate the transaction. The Allodial Act is presented above. This act has a history dating back to at least the year 1000 (NOU, 2003:26). According to the act of 1821, the first-born son in the family had first priority for taking over the family farm and its forests. The daughters' rights came after all sons' rights. In 1974, an amendment to the act took place, and with that revision the first-born child, regardless of sex, was allowed first priority to allodial possessions. The change did not give full juridical gender equality in this allodial matter due to a very spacious transitional rule: The 1974-amendment did not apply for men born before 1965. Men born before that time had priority before their sisters. The transitional rule was understood as legally necessary due to rules on rights to properties in the European Convention on Human Rights, and also due to the rule in the Norwegian Constitution saying that no act is allowed to work retrospectively. In 2009 a new amendment took place, and with that the Allodial Act says that the first-born child, regardless of sex and time of birth, is allowed first priority to the allodial possessions. The priority is the oldest one (and her/his line), then the second oldest (and her/his line), the third oldest (and her/his line), etc.

According to Statistics Norway there exist no figures for number of allodial agricultural estates (Snellingen Bye, personal communication 13 January 2015). In a highly tentative estimate from 2003, it was said that at that time it might have been about 180 000 agricultural estates in total (including forest estates) and in the order of 130 000 – 140 000 of them were allodial estates (NOU, 2003: 26: 37).

In Norway there is no special marriage rules applied to forests/agricultural land.

4.4. Changes of the forest ownership structure in last three decades

In a European perspective there has in Norway scarcely been any changes in forest ownership structure the last 30 years. Among other things this is due to the working of the Concession Act, the Allodial Act and the Land Act.

4.4.1. Changes between public and private ownership

No changes worth mentioning.

4.4.2. Changes within public ownership categories

No changes worth mentioning.

4.4.3. Changes within private forest ownership

No changes worth mentioning.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

What is going on in Norway is scarcely "trends" for new forest ownership. In the Norwegian context we see some small changes, and in table 5 we have given them significance relatively to each other. Privatization of forest land is manifested in Statskog SF's selling of scattered forest estates to the degree that the buyers are private forest owners. We assume that the buyers mostly are personal forest owners, but we do not know for sure because information on the buyers is not public. The significance given to privatization of public forest management is due to Statskog SF's outsourcing of practical forestry work to private firms after a competitive tender.

However, the practical forest management is strongly regulated through the tender documents. The significance 2 for new forest ownership through afforestation is related to the afforestation process mentioned earlier in this report (see 1.1. on forestry). The forest in this afforested areas are now in their early economic mature period, and harvesting for sale has now started some places. The owners of these forests have owned a growing forest, and have not taken much part in for instance harvesting. The areas with afforested forests are low on infrastructure, culture for forestry, etc. We have given significance 3 to "Changing life style". There is a rather huge decline in forest estates that also have active agricultural production (food, etc.) While 62% of the forest owners (all categories) cultivated land in 1979, only 30% did so in 2010 (Rognstad and Steinset, 2012). Further, the relative importance of income for personal forest owners from forestry has decreased a lot. For personal forest owners with positive business income from forestry in 2010, that income was in average 7% of their total gross earnings that year, 1% if also the husband's/wife's/cohabitant's income was included (Rognstad and Steinset, 2012).

Table 5: Trends in forest ownership in Norway

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	1
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	2
• New private forest owners who have bought forests	0
• New forest ownership through afforestation of formerly agricultural or waste lands	2
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	3
• Other trend, namely: Nature based tourism related to forest land	1

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

4.5. Gender issues in relation to forest ownership

As table 1 shows, in 2011 there were 86 845 forest estates with a male reference owner, and 29 157 forest estates with a female reference owner. This implies that 25% of the 116 002 personal owned forest estates has a female reference owner.

For the year 2012 Statistics Norway (2013c) published figures for owners (and not estates) and also for joint ownership and the personal owners' gender. That year there were 157 837 personal forest owners (including persons owning alone, owning with their husband/wife in formal joint ownership, or together with others in formal joint ownership). 30% of these personal forest owners were female.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organizations such as conservation and heritage NGOs, self-organized community-based institutions and other philanthropic ("characterized or motivated by philanthropy; benevolent; humane" OED) organizations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		X	
• NGO with environmental or social objectives		X	
• Self-organized local community groups		X	
• Co-operatives/forest owner associations		X	
• Social enterprises		X	
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

As reflected above to our knowledge there is not this kind of ownership in Norway, and we know the Norwegian forestry sector rather well. We assume that issues regarding charity etc. has limited relevance in social welfare regimes (at least in Norway).

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organization and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

In Norway there are four types of commons: State commons, Parish commons (or "Bygd commons", Norwegian: "Bygdeallmenning"), Private commons and what may be termed Farm commons. Berge et al. (2011) describe them such:

> The Norwegian term (word) for commons is 'allmenning' […] There are three types of 'allmenning'. They are classified according to the ownership of the ground (the abstract land surface) into State Commons, Bygd Commons, and Private Commons. The ground of the State Commons is owned by the state company Statskog. The ground of the Bygd Commons is owned by a majority (usually 100%) of the commoners themselves. The ground of the Private Commons is owned by private citizens or companies. But only two such commons are known for a fact that they exist today. […]
>
> There is, however, a fourth type that in Norwegian terms is called 'realsameige'. It will here be called Farm Commons. While the rights of common (not the ground) of the three commons named above are held jointly, the rights of the stakeholders of the Farm Commons are held in common (both the ground and the specific rights of exploitation). The stakeholders are in this case farm units, not any kind of person. The term 'realsameige' may literally be translated as 'co-ownership among real properties'. Farm Commons is in fact the most frequently encountered type of commons in the Norwegian out-fields. (Berge et al., 2011: iii-iv)

Let us in the forthcoming spend time only at State commons, Parish commons (Bygd commons) and Farm commons.

According to Sevatdal and Grimstad (2003: 96) the Norwegian "commons have no history of their own; the history of the commons is part of the general rural history". And, they continue, to understand the origin, development and the present status of them it is necessary to understand the geographic and climatic context of the country, the settlement patterns, farming systems and livelihood strategies farmers developed

during different historical periods. It is also important "to understand the basic trends in economic and political history, of which the development of the commons is deeply embedded" (Sevatdal and Grimstad, 2003: 96). Their presentation shows that commons in Norway have a several hundred years' history.

"To compare commons it is necessary to be able to consult the legal rules that define their governance", Berge et al. (2011: iii) claims. For State commons the Mountain Act and the Act on Forestry etc. in the State Commons define the rights and duties of stake holders, including commoners. For Parish commons (Bygd commons) the Act on Bygd Commons does. The situation for the Farm commons are, however, different:

> [The Farm commons] are not regulated by particular legislation like State commons and Bygd commons. They are, of course, subject to all relevant acts. There is one default act that comes into force in case of disagreements among co-owners. This is the act on co-ownership and applies to everything that has more than one owner. But by the nature of their resources and their long time existence one may also say that Farm commons, more than most things owned in common, are governed by customs and contracts among the co-owners. (Berge et al., 2011: v)

Even if there are national juridical regulations in Norway there may be necessary to study each individual common "separately to get a true and precise understanding of its legal situation" (Sevatdal and Grimstad, 2003: 103). Sevatdal and Grimstad substantiate this by focusing on one legal aspect:

> First of all, one basic principle in the legislation concerning the *relationship between various stakeholders* in the area of property right, tenure and the parties in the commons can be summarised as follows: *The legal relationships between the parties in the property rights regime have 'always' been, and still is, based on the principle of freedom of contract.*
>
> This means that many aspects of the laws apply only *if the parties involved do not decide otherwise* by agreement and contract, orally or written, explicit or implicit. So even if the law says that the relationship should be so and so, this does not necessarily mean that the parties cannot enter into a binding contract deviating from the law. It might simply mean that if they do not decide otherwise, *then* the statutes in the law should be applied, if necessary by court rulings and subsequently enforced by the proper authorities on behalf of the 'winning' party. It also means that if they do not all agree, then the law will have to be applied, in many cases even if only one out of many disagree.
>
> It is easy to see that this principle is paving the way for a wide variety of local solutions, and also to realise what an important role customs and traditions play in this field. One might say that the institutional framework is partly created locally. It is largely this principle, and the interplay it creates between local and central 'legislation' that gives the regime of common property such viability in Norway – the parties themselves are free – and responsible – to find a proper solution, but the central legislation guarantee that some sort of solution will eventually be found. (Sevatdal and Grimstad 2003: 99, italics in original)

The commons is no big issue in the Norwegian society today, neither in the public debate nor in political processes. This is reflected for instance in the fact that the State commons' area in public figures is included in the state owned area, as is the case in table 2. Further, this lack of focus is manifested in the two latest White Papers on forest and forestry. In the White Paper no. 17 (1998-99) commons are mentioned when the White Paper discusses the rules for the Parish commons and the State commons and women's chance to be elected to the common's board (page 105). Except for that commons are more or less left out. This is the situation in the White Paper no. 9 (2011-2012) also, but this time it is only the State commons that is referred to – and only in a presentation of the management of the State commons (page 293).

There is not much figures for the commons in Norway, but at least some for the State commons and the Parish commons (Bygd commons). According to Sevatdal and Grimstad (2003: 132) there was at that time 195 State commons with approximately 20 000 shareholding farms and 51 Parish commons with approximately 17 000 shareholding farms. Out of the State common's land (26 622 km^2) 7% was productive forest, while 31% of the Parish commons' land (5 500 km^2) was productive forest.

For Farm commons no such figures are available, but to Sevatdal and Grimstad's (2003: 112) understanding "both area and number of shareholders would certainly be larger then the other types combined". The lack of figures for the Farm commons is due to, among several reasons, that:

> Farm commons do not constitute cadastral entities as State and Parish commons do. The cadastral unit is a *property* unit, *including* the share in a farm commons, and our statistics are based on this 'combined' unit, not the different elements that make up such a unit. Hence the farm commons are not registered as such, they are not (at present) visible in the land records, and their number and area are not captured in the land records and statistics. (Sevatdal and Grimstad, 2003: 110, italics in original)

To our knowledge there is no new commons in the making.

5. Forest management approaches for new forest owner types

Authors of chapter 5: Erlend Nybakk and Bruce Talbot

The Action is interested in whether there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. While we are aware that not much attention has been given to this, and that there is therefore not much literature available, we are convinced that this is an issue: if owners have different goals for their forests, then this must require new forms of management, if they no longer have the necessary skills to carry out the work, then new types of services need to be offered, etc. There are assumingly implications for silviculture, technology, work organization and business models. Such new approaches may be discussed under the keyword of new ownership types but are commonly not addressed.

5.1. Forest management in Norway

The forest is generally managed by the forest owners themselves. Active private forest owners are often members of one of the two forest owner's organisations mentioned earlier in the report, Norskog or The Norwegian Forest Owners' Federation. While Norskog is countrywide, the Forest Owners' Federation is organized into eight regional co-operatives. And while Norskog and Nortømmer, the timber purchasing firm owned by Norskog, are two separate businesses, the individual regional co-operative and its timber brokering department is one firm. Both Norskog and The Norwegian Forest Owners' Federation and its regional co-operatives, have a high degree of influence on the Norwegian forest policy, but no research has been done on this in recent years. According to the Forest Owners' Federation themselves, 68% of the country's total harvesting for sale in 2013 was traded through their regional associations (Norwegian Forest Owners' Federation, 2014a). The regional associations trade timber both for members and non-members and for all types of forest owners. Harvesting and in some cases thinning and other forest management, is also organized via the associations. So in summary, the forest is managed by the owner by law, however in practice, a large part of the work in personal owned forests is done by forest contractor companies, often organised via forest owner associations. Short term contracts are normally used. Before 1997 the articles of association for the Forest Owners' Federation said that the members had to deliver their timber for sale through the Federation. In that year the EFTA Surveillance Authority forbade this delivery duty rule (Johnstad, 1998). The disappearance of the rule had a significant impact on the Norwegian forest management and the forest owners' timber market activities because the owners organized in the Federation after that could turn to whichever timber broker they preferred. The last three decades have shown that forest owners are less dependent of the income from the forest land and that they are doing less forest management work themselves.

5.2. New or innovative forest management approaches relevant for new forest owner types

Some of the timber brokers (first-hand buyers) have started buying standing trees, i.e. at stump. This is normally done with a time-limited contract. The forest owner will then know the price before harvesting, and does not need to be involved in the harvesting process. The opportunity to harvest the timber according to market demand and with a more effective logistics is seen as an advantage for the timber brokers. With new forest owners this can be additionally advantageous, as they will often have less knowledge related to general forestry, market conditions, and the benefits of economies of scale.

In Norway we have seen a high economic growth and increased labour costs over recent decades. Timber prices have dropped

relative to other goods, and income from the forest land is therefore of less importance today than it has been. At the same time we have seen a significant technical development in the forest sector. Most of the harvesting today(>95%) is harvested with advanced forest machines partly operated with digital bucking to length systems. Another example is remote sensing using light detection and ranging technology (LiDAR) in airborne laser scanning, which has become an effective and frequently used tool in forest enumeration. These new technologies, combined with a less profitable forest sector, have reduced the need and interest for involvement of forest owners. From a forest owner perspective, most of the work and administration can be done digitally and the physical harvesting and logistics will be managed externally by associations and entrepreneurs. The challenges we see today, with forest owners living far from their forest land ("urban forest owners"), are of lower concern due to possibilities of 'remote management' that technical developments are offering. New forest owner (typically forest owners that have inherited properties) can therefore easier outsource the forest management and get income from their forest land without investing time and are therefore less dependent on knowledge about forest management. Yet, changes in social aspect with norms and attitudes towards the forest land still have an effect on forest management.

5.3. Main opportunities for innovative forest management

The main opportunities are web-based solutions for procuring services, marketing online (e.g. www.norexeco.com) and sales, as well as settling contracts, and further, remote viewing of operations.

5.4. Obstacles for innovative forest management approaches

Obstacles for innovative forest management approaches are:

- Lack of cooperation within the forest value chain. It leads to efficiency loss, reduced profitability and makes it hard for forest owners to benefit from new and improved forest management.
- Lack of incentive to improve forest management. For example, investment in forest roads makes it possible to harvest in the wet season, when it is hard to keep up the harvesting. However, the forest owner is not paid enough to compensate for the investment.
- Improved forest management to improve timber quality according to the market needs is not compensated in increased timber prices, therefore undervaluing the investment.
- The property market for forest land is heavily regulated and very few properties are sold out of the family. This makes it hard for forest owners to grow and to gain economies of scale related to new forest management. This makes it also hard for new and more active forest owners to get access to more forest land.
- High labour cost makes single tree harvesting unprofitable. The forest is relatively homogeneous, and the value of one single tree is low.
- Everyman's right to enter forest land makes it hard to get profitable investments in forest management with the aim of developing tourism activities (except for hunting).

CASE STUDY 1: EXCAVATOR-ASSISTED GROUND BASED CTL SYSTEMS

As earlier described, the large scale afforestation programme in the coastal areas after WWII has resulted in many new forest owners with considerable resources becoming mature for harvesting – potentially contributing to local wood industries. The regions are characterized by very steep terrain in the fjords, and this gives rise to special challenges needing specific harvesting systems – and investments in infrastructure where there previously has been no history of forestry or forest management and cooperation. This case reports on the use of excavator-assisted ground based CTL systems, as against tower yarders, in steep terrain. The practice of using an excavator to assist a conventional harvester in gaining access to steep terrain – by excavating a series of temporary strip roads – is expanding rapidly and is now commonly found along the entire coastal region of Norway.

Applying this method, the excavator alternates with the harvester after all trees within crane reach have been harvested, and opens up another 6-8 metres of road at an acceptable slope, then once again yields to the harvester. Studies of the technical and economic performance of this system showed the harvesting cost to be roughly 50% of the cost of using cable-based systems in similar terrain (Lileng, 2007). The method negates the need to construct forest roads which transect the properties of many forest owners, and therefore simplifies management considerably. However, concern has been expressed as to the sustainability of this practice, as it is commonly performed on steep slopes in high rainfall areas and it includes little or no planning, no drainage, and no stabilization. The method is economically attractive and therefore difficult to substitute – the socio-economic importance of activating a local wood based industry has to be weighed up against potential negative environmental issues.

6. Policies influencing ownership development / Policy instruments for new forest owners

Author of chapter 6: Johan Barstad

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

94% of Norwegian forest owners are private persons or families. In general the forest property is part of some type of agricultural unit. Thus the term farm-forestry might be used as a synonym for Norwegian forestry. From the forest statistics we find there are relatively fewer large properties in 2013 than in 2005 (9.9 % versus 10.4 % of the properties have more than 200 ha of productive forest). On a yearly basis, some 8-9 000 agricultural properties change owner, out of which almost 2/3 handovers intend to continue the agricultural activities. About the same percentage include forest area of 2.5 hectares or more. In 2013, 61% of the handovers were done within the family (e.g. from one generation to the next). All data cited in this paragraph are extracted from www.ssb/statistikkbanken.no. The viewpoints presented are based in the author's personal competence in Norwegian rural policies and rural development.

6.1. Influences of policies on the development of forest ownership

For all general purposes, there are no new, specific instruments, apart from the already existing Allodial Act, with the intention to regulate inheritance and hand-over of farm- and forestland. The lasting effect of the Allodial Act has been to conserve the existing ownership and property structure. The Allodial Act regulates change of ownership with regards to agricultural properties (inheritance rules), and it has had a significant effect towards the hindrance of dividing existing properties into smaller parcels. There is no minimum-size limit for parcels, but the Act serves to contain the parcel undivided. Thus, even if the majority of parcels are small, they do not get any smaller.

In 2004, the direct state support to reforestation was discontinued. The result was a sharp decline in afforestation / reforestation. Local and regional based support have since been introduced, but the general levels of both the support and planted hectares per years still are significantly lower. The form of support may vary from region to region and over time, as this is dependent on the means available at local level.

As we have seen, the traditional forms (privately owned farm-forests and forest estates) are still absolutely dominant. From the societal and demographic changes in the population may arise new, collaborative operations, as we can observe embryonic in parts of western Norway already, where small-scale, absentee and non-competent owners will try to establish various types of cooperative solutions. This is mostly a result from pressure from below – or from the sector itself. At national level, regional attempts to new policies, like Coastal Forestry, to promote activity in the maturing coastal forests of western and northern Norway (www.kystskogbruket.no) are supported.

As said, ownership is largely an element that serves to keep the small-scale, fragmented forest property structure. On a national basis, sale or hand-over from within the larger family to outside is still at a relatively insignificant level. Whether this situation will last, is more up for discussion, as societal and demographic changes has an increasing amount of owners being also physically disentangled from their forest through population centralization tendencies.

6.2. Influences of policies in forest management

Forest management planning (FMP) at property level is voluntary – but is connected to the supportive structures (access to what exist of direct subsidies to carry out FMP), resulting in a de-facto need for FMP if owner aims to engage in active, commercial forestry. FMP at property level is not carried out or directly helped by the state. This is the domain of private companies (still they may cooperate closely with public sector personnel, so it is an example of the collaborative state). The public still supports strongly through more general / area-based planning that is a basis for planning on estate/property level to build upon. Important: the forest owner is not obliged to follow recommendations from the public system.

In general, the policy instruments are rooted in our general rural development policies (creating possibilities for viable and sustainable economic activities across the whole country of Norway). Since forests normally are an element of farm-units, and for active farm-units most often is the least significant element, both agricultural and rural development policies have generally been focussing on farming.

In the later decades, sustainability and environmental based policies have come to terms, e.g. regarding certification processes, size of clear-cuts, species management etc. Direct policies aimed for increased (or decreased for that part) logging largely have not been in effect. The Forest Fund though is an example of such a policy instrument, as this to a degree opens up for future tax reduction as a result of engaging in commercial logging: A percentage of the sales value is placed in the fund – if that money later is spent on certain specified activities, the owner will not need to pay due tax on that sum of money.

Further, a mixed system including both public and the sectors own support systems are available for owners as consultants at all stages through forest management and commercial activities regarding forestry. Private-public collaboration has been a trademark of Norwegian society for a long period (especially since World War II). It may be hard to distinguish and to categorise what is what and who is who, as this often is more in the form of practical and adaptable partnerships.

If forest-owners are affected by regulating policies, aimed at restricting harvesting, the question of compensation for their (potential) loss can be answered with a clear ‘Yes and no!’. Compensation is linked to the degree of negative effect the restriction imposes. On a general scale, compensation is ‘felt to be’ low, still if compared to actual loss of income, it might not be too bad, given the fact that forestry often is of little importance to the farmers/owners total income. Perhaps more important is the feeling of being restricted in doing what one might want to do.

In several counties there has been positive experience from engaging with forest owners to establish voluntary based protection areas, based upon a method of ‘dialogue based management’. Previously, restrictions generally were imposed (from the outside, from the government, from the environmental focus) while the dialogue-based aims, through discursive methods, to establish broad agreement between the stakeholders as to what, where and how. There still are practical and formal obstacles connected to such voluntary processes.

6.3. Policy instruments specifically addressing different ownership categories

It is not easy to find policy instruments addressing the different ownership categories. Perhaps due to the fact that ownership categories seldom have been problematized. In the 1990’s there was a special policy aiming towards female forest owners. This instrument is no longer explicitly active. Further, the forest management support system aims to help small-scale owners, but not to a degree where larger owners are excluded. The same rules are in effect, but often the large-scale owners already have the knowledge, the skills and the means to perform as a result of their already existing operations. As to scale, there are no fixed rules for what is large and what is small in this respect. This is partly due to highly diverse natural conditions, where a smaller parcel in the southeast might be more economic viable than a large parcel in the

north. From the economic viability side, 'small' and 'large' are more connected to the properties abilities to generate yearly or semi-yearly employment/logging. Again, it may be fruitful to bring to mind that policies towards forestry largely were rooted in/from rural policy in general and farm policy in particular.

In the coastal areas (see reports from Follo and Vennesland, these are areas entering into the harvesting and final stages resulting from a national afforestation effort), a special focus has been in place to alleviate the inherent difficulties in relation to establishing commercial forest activity in areas with no or low forestry tradition. One result is the need to establish collaborative or cooperative solutions where small-scale owners, often with somewhat fragmented properties, cooperate to establish effective logging solutions.

6.4. Factors affecting innovation in policies

As stated above, policies are generally, at best, aimed at forestry sector, more often towards farming or rural development in general. If this view is left out, it may be difficult to give a correct account of past, present and future forest policy.

This being said, there is a broad understanding and high acceptance for the need to have more specific policies in order to reach results. Only, one might ask if there is general agreement to what are the forest challenges and what might be the desired results. Looking at Norwegian politics and policy-formulation, forestry is low on the agenda. Looking at economic, demographic or occupational aspects, this still holds – except from a special few locations. Thus, forestry can be said to 'have been left to itself', developing policy needs and generating examples and scientific evidence – without getting focus on the main scene.

This being said, the fact remains that Norway has a multitude of forest owners, generally small to very small scale and generally with low or no active forest competence. When the owners also, increasingly, become absentee owners and work in other industries and services, while retaining decisive power to any management or logging activities, this is easily – and correctively – described as a non-desirable situation.

So, yes, there are several barriers. What is more uncertain (or perhaps improbable) is to what degree solutions will come from forest policies alone, and if so if forestry aspects are strong enough to penetrate into activation in more general policies.

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8. Annexes

8.1. Tables with detailed description of 8 most important publications

In the Norwegian country report "8 Annexes" includes only eight publications.

Publication 1	
Full reference of study/publication	**Follo, G. (2011c) *Factors influencing Norwegian small-scale private forest owners' ability to meet the political goals*, Scandinavian Journal of Forest Research, vol. 26, no. 4, pp. 385-393.**
English language summary/abstract	Norwegian forest policy has high-level, complex objectives for the products and benefits from the forest, including increased contribution to the climate, preservation of biodiversity, and creation of economic values. In Norway, it is first and foremost small-scale private forest owners who have to deliver on these expanded goals. The article reveals owners' lack of forestry competence, and elaborates on the role of forestry employees (advisers) in owners' decision-making processes, be it forestry competent owners or not. There is, however, a decreased number of advisers in the private and public forest services, implying that forest owners are atomized in the meaning of being alone. This type of individualization and an increasing lack of forestry competence among forest owners are a contradiction. The mismatch is serious for the government and the forestry business because it probably hampers the fulfillment of the political objectives. The article presents six options for meeting the obstacles to goal fulfillment. The article is based on two research projects from the counties of Trøndelag and Hedmark. Data were collected between 2002 and 2007 and include survey, focus group interviews, in-depth interviews, fieldwork and document analysis.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	☐ University ☐ Public Research Insitiute ☑ Private Research Institute ☐ Other (please name below)
Type of funding used (multiple answers allowed)	☑ Private Industry ☑ Private other ☑ National ☑ Public Sub-National ☐ Public EU/cross-national Europe ☐ Public International beyond Europe ☑ Public other
Regional scope	☑ Sub-national ☐ National ☐ Cross-national Europe ☐ International beyond Europe
Theoretical approach	Anthropology, sociology, gender perspective.
Methodical approach	Fieldwork, qualitative interviews, questionnaire survey, focus group interviews, document analysis.

Thematic focus	☑ ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) ☑ motives and behaviour of ownership types ☐ new management approaches ☐ policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	Lack of forestry competence means that the forest owner in her/his forest management must rely on what other forestry actors say. S/he has no other option than to trust the other person. S/he is simply dependent on a trust relationship due to lack of forestry competence.
Weblink	

Publication 2	
Full reference of study/publication	**Follo, G., Forbord, M., Almås, R., Blekesaune, A. and Rye, J. F. (2006) *Den nye skogeieren. Hvordan øke hogsten i Trøndelag?* [The new forest owner. How to increase the harvesting in Trøndelag?], report 1/06, Trondheim: Norsk senter for bygdeforskning. 288 pages.**
English language summary/abstract	No
Language of the study/publication	Norwegian.
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	☐ University ☐ Public Research Insitiute ☑ Private Research Institute ☐ Other (please name below)
Type of funding used (multiple answers allowed)	☑ Private Industry ☑ Private other ☑ National ☑ Public Sub-National ☐ Public EU/cross-national Europe ☐ Public International beyond Europe ☑ Public other
Regional scope	☑ Sub-national ☐ National ☐ Cross-national Europe ☐ International beyond Europe
Theoretical approach	Anthropology, sociology, gender perspective.
Methodical approach	Questionnaire survey, focus group interviews.
Thematic focus	☑ ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) ☑ motives and behaviour of ownership types ☐ new management approaches ☐ policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	The report presents characteristics of forest owners and their strategies for future harvesting. It highlights and discusses the significance of price/economy, social and cultural aspects, technology and logistics, organization of the value chain and urbanization processes on harvesting. The study shows that it is socially accepted to harvest; efforts must be made to establish harvesting willingness among forest owners; forest owners are very different; price/economy means a lot for harvesting, but not everything; forestry and groups of forest owners are moving apart from each other; it has to be many different and sustained measures to increase harvesting; to inform is not the same as to motivate - and to have very small amount of forestry knowledge does not imply that the forest owner is not interested.

	The report includes figures from Blekesaune, A. (2005) Tabellrapport fra en undersøkelse om eiere av skog i Trøndelag, Report 4/05, Trondheim: Norsk senter for bygdeforskning.
Weblink	http://www.bygdeforskning.no/publikasjoner/den-nye-skogeieren-hvordan-oeke-hogsten-i-troendelag

Publication 3	
Full reference of study/publication	**Follo, G. (2014) *Eiendomsoverbyggende samarbeid for skogeiere i kystskogbruket – utfordrende, men med stort potensiale* [Multi-property cooperation for forest owners in the coastal forestry – challenging but has great potential], report 4/14, Trondheim: Norsk senter for bygdeforskning. 208 pages.**
English language summary/abstract	The publication is the final report from the research project "From ten to one – multi- property cooperation for personal forest owners in the coastal forestry". Prototypically multi-property cooperation refers to a management of several forest estates as if they were one, hence the title "From ten to one". The project description gave the empirical basis and objectives for "From ten to one". The empirical basis was: (1) Norwegian forest ownership is fragmented with many and small properties, more so in the coastal forest areas than elsewhere in Norway, (2) among many personal forest owners forestry competence is rather weak, (3) according to Norwegian forest policy forestry shall contribute to the climate, preservation of biodiversity, creation of economic value and maintenance of viable rural communities, (4) little has been done to adjust the structures of the forest properties, so the present structure of numerous small properties has become a basic premise for future actions, and (5) the public forestry service is being reduced. "From ten to one" followed four field projects located in and operated by the coastal forestry: The Southside-road and The Forest Rings in Levanger and Frosta (North-Trøndelag), the Ørstaforest (Møre and Romsdal) and the Feios-project (Sogn and Fjordane). In the field projects forestry actors tried to establish multi-property cooperations for forest owners. In total 39 qualitative interviews in two rounds (2011 and 2012) were completed with forest owners associated with the field projects. A total of 54 qualitative interviews in three rounds (2010, 2011 and 2013) were completed with the field project actors. The main conclusion from "From ten to one" is (in a Norwegian setting) that multi-property cooperation is challenging, but has great potential. "Challenging" because the field projects to a limited extent succeeded with the cooperation type they wanted to establish, a type where the forest owners cooperated with each other. "Challenging" also due to forest owners' habit of thinking solely about their own forest, and because Norwegian laws and regulations are not adapted to the most long lasting and most formalized cooperations. On the other hand, there is "great potential" because the study showed that forest owner cooperation can address the complex combination of problems identified in the five factors that formed the empirical basis of the project. "Great potential" also because the forest owner cooperation can provide many benefits, and because forest owners' forestry competence increases or is maintained when building cooperation. A further reason for claiming that forest owner cooperation has great potential is all lessons learned from "From ten to one," lessons published in this final report. Had the field projects at startup known what is known today, their challenges had probably been smaller. The contents of the final report point toward possible future action in the development of Norway's forestry sector. The report illustrates the many varieties of multi-property forest owner cooperations, varieties which provide many opportunities for adaptation to the type of forest owner, local and regional situation, etc. Two sets of wise practice are presented ("wise" in the sense that the practices optimize the chance to succeed with the forest owner cooperation). One set of wise practices targets the selection of sites for establishment of forest owner cooperation, and the other targets practices for accomplishing forest owner cooperation. To get more multi-property cooperation in Norway the most important thing now is to get more such voluntary cooperations. If this can be done, forest owner cooperation will be easier for forest owners and forestry actors to think of as an option and behave in accordance to it. The final report's

	recommended actions are grouped under five phrases. It is “the individual’s motivation”, “wise practice”, “tools”, “forest coordinator” and “socio-cultural dissemination”. The individual must think and act under the maxim that “forestry=forest owner cooperation”. Wise practices for successful forest owner cooperation have been described briefly in the section above. The tools are manuals and financial support to the forest owner cooperation and special distribution of grants. The establishment of an organized system of forest coordinator positions is recommended, as is development and implementation of forest owner cooperations that stand as beacons for others to copy.
Language of the study/publication	Norwegian.
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	☐ University ☐ Public Research Insitiute ☑ Private Research Institute ☐ Other (please name below)
Type of funding used (multiple answers allowed)	☑ Private Industry ☑ Private other ☑ National ☑ Public Sub-National ☐ Public EU/cross-national Europe ☐ Public International beyond Europe ☐ Public other
Regional scope	☑ Sub-national ☐ National ☐ Cross-national Europe ☐ International beyond Europe
Theoretical approach	Anthropology.
Methodical approach	Trailing research (formative dialogue research): The researchers sometimes collected research data from the field projects and sometimes gave feedback to them based on the researchsets of repeated qualitative interviews.
Thematic focus	☑ ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) ☐ motives and behaviour of ownership types ☐ new management approaches ☑ policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	Included in the summary.
Weblink	http://www.bygdeforskning.no/publikasjoner/eiendomsoverbyggende-samarbeid-for-skogeiere-i-kystskogbruket-utfordrende-men-med-stort-potensiale

Publication 4	
Full reference of study/publication	**Strupstad, L.M. (1991)** ***Den tause skogeier. En analyse av kvinnelige skogeieres aktivitetsnivå og deltakelse i skogbruket*** **[The silent forest owner. An analysis of female forest owners' activity and participating in forestry], report 43, Bø: Telemarksforsking-Bø. 106 pages.**
English language summary/abstract	No
Language of the study/publication	Norwegian.
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	☐ University ☐ Public Research Insitiute ☑ Private Research Institute ☐ Other (please name below)
Type of funding used (multiple answers allowed)	☐ Private Industry ☐ Private other ☑ National ☐ Public Sub-National ☐ Public EU/cross-national Europe ☐ Public International beyond Europe ☐ Public other
Regional scope	☑ Sub-national ☐ National ☐ Cross-national Europe ☐ International beyond Europe
Theoretical approach	Gender perspective.
Methodical approach	Questionnaire survey, qualitative interviews.
Thematic focus	☑ ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) ☐ motives and behaviour of ownership types ☐ new management approaches ☐ policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	Women are (in fact) forest owners. This was at that time an important issue to show. Respondent rates were 37% among the female forest owners, and 52% among the male forest owners. 68% of the female respondents had them self allodial right to the forest estate in question, and 20% was forest owners through their husband's allodial right to the forest estate. The female forest owners were to a small degree active in the practical forest work, but took more part in administrative work. When it came to practical forest work, 33% of the female respondents participated in planting, only 3% participated in harvesting. The study found several differences between female and male forest owners, for instance when it came to their own activity on the forest estate. Strupstad termed the female forest owners as "silent forest owners" – they had been invisible and very silent.
Weblink	

Publication 5	
Full reference of study/publication	**Størdal, S., Lien, G. and Baardsen, S. (2006) *Skogeiernes beslutningsatferd* [Forest owners' decision making], ØF-report 22/2006, Lillehammer: Østlandsforskning. 54 pages.**
English language summary/abstract	[The summary in the publication is rather long, 2 pages. See the weblink for the full English summary. Here are some elements from the summary.] Most of the forest area in Norway is related to combined agricultural and forestry properties ('combination owners'). However, during the past decades income from other sources on- and off-property has gained importance relative to income from timber harvests, which today plays only a marginal role for the total income of the forestry households. One may therefore raise concerns whether the decreasing role of forestry as an income source also reduce owners' focus in exploitation of the full income potential from the properties, and thus the activity level. […] The main conclusion from the project is that it is better for activity levels in forestry that forest owners having their main source of income on-property.
Language of the study/publication	Norwegian
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	☐ University ☐ Public Research Insitiute ☑ Private Research Institute ☐ Other (please name below)
Type of funding used (multiple answers allowed)	☐ Private Industry ☐ Private other ☑ National ☐ Public Sub-National ☐ Public EU/cross-national Europe ☐ Public International beyond Europe ☐ Public other
Regional scope	☑ Sub-national ☑ National ☐ Cross-national Europe ☐ International beyond Europe
Theoretical approach	Economics.
Methodical approach	Statistics, panel data, questionnaire survey.
Thematic focus	☐ ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) ☑ motives and behaviour of ownership types ☐ new management approaches ☐ policy instruments addressing ownership
Main results should be given here if not yet included in the summary	Included in the summary.
Weblink	http://www.ostforsk.no/images/rapporter/222006.pdf

Publication 6	
Full reference of study/publication	***Amdam, J., Barstad, J. and Olsen, G. M. (2000) Kvifor skal vi avverka skog? Om årsaker til manglande skogavverking på Vestlandet [Why are we going to harvest forest? On the reasons for lacking forest harvesting in Western Norway], research report 40, Volda: Høgskulen i Volda, Møreforsking Volda. 127 pages.***
English language summary/abstract	A study of forest-owners in 4 counties in Western Norway. Aim: to identify factors which promote or hinder logging. Survey to a sample of owners who had logged for sale at least once during a 10 year period. Reply rate 62%. Mainly descriptive statistical analysis. Interviews with +70 owners (simultaneous interviews with husband and wife if both involved) in two neighbouring counties. Because of large amounts of precipitation and favourable growing conditions for spruce in Western Norway, it is possible to achieve production four times higher in raw material for a given area, compared to pine, obviously an important motive for such activity. Since spruce is not naturally occurring, plants are imported from other parts of Europe and America which have approximately the same growing conditions as in Western Norway; this gradually causes a natural rejuvenation. This process has led to a development of organizations and work methods which focus on motivating property owners to plant spruces in appropriate areas. Today spruce that was planted before and just after World War II is beginning to become mature and must be harvested. The problem is that such logging is not happening to the extent necessary to avoid "old age" and reduced economic value. What are the causes of this and what should be done in order to stimulate sustainable logging from the local economic point of view? Through quantitative and qualitative research including, among other things, interviews with several forest owners, we have found that the causes for lack of timbering are complex and connected to the property owners themselves, to economic conditions, but also to a lack of tradition and knowledge of timbering and sale of that type of lumber. In this study we focus on status and development of knowledge recourses, relational recourses and mobilisation related to forestry. Because forestry usually is only the third most important income for forest owning households on the West coast of Norway, a lot of mobilisation activity is needed to increase activity
Language of the study/publication	Norwegian
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	☐ policy instruments addressing ownership ☑ new management approaches ☑ motives and behaviour of ownership types ☑ ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) ☐ International beyond Europe
Type of funding used (multiple answers allowed)	☐ Cross-national Europe ☐ National ☑ Sub-national ☐ Public other ☐ Public International beyond Europe ☐ Public EU/cross-national Europe ☑ Public Sub-National

Regional scope	☑ National ☐ Private other ☐ Private Industry
Theoretical approach	Communicative planning, sociology, political sciences, economics
Methodical approach	Mixed methods, quantitative survey, qualitative interviews and document studies
Thematic focus	☐ Other (please name below) ☑ Private Research Institute ☐ Public Research Insitiute ☐ University
Main results should be given here if not yet included in the summary	Included in the summary
Weblink	

Publication 7	
Full reference of study/publication	**Nybakk, E., Crespell, P., Hansen, E. and Lunnan, A. (2009) *Antecedents to forest owner innovativeness: An investigation of the non-timber forest products and services sector*, Forest Ecology and Management, vol. 257, no. 2, pp. 608-618.**
English language summary/abstract	Increased urbanization in many societies is having a negative impact on vitality of rural areas. To maintain the vitality of these areas governments have employed a variety of policies, some of which are designed to facilitate innovation and enhance landowner innovativeness. However, little research has investigated the antecedents to landowner innovativeness and whether innovativeness positively impacts economic performance in this setting. The present study investigates these issues in the context of Norwegian forestland owners and their involvement in non-timber forest products and services (a form of ecosystem services). The authors present a conceptual model hypothesizing that social networking, entrepreneurial climate, and a learning orientation each have a direct, positive impact on landowner innovativeness and innovativeness has a direct, positive impact on economic performance. Property size is included as a moderating variable. Data were collected via a mail survey and a total of 683 useable responses were received reaching an adjusted response rate of 35%. Results show that social networking and a learning orientation positively impact innovativeness, but that entrepreneurial climate does not. Innovativeness was found to positively impact economic performance. The authors outline implications of the findings that may be used by policy makers, landowners and research.
Language of the study/publication	English.
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	☑ University ☑ Public Research Insitiute ☐ Private Research Institute ☐ Other (please name below)
Type of funding used (multiple answers allowed)	☐ Private Industry ☐ Private other ☑ National ☐ Public Sub-National ☐ Public EU/cross-national Europe ☐ Public International beyond Europe ☐ Public other
Regional scope	☐ Sub-national ☑ National ☐ Cross-national Europe ☐ International beyond Europe
Theoretical approach	Innovation management.
Methodical approach	Mail survey.

Thematic focus	☐ ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) ☑ motives and behaviour of ownership types ☑ new management approaches ☐ policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	Results show that social networking and a learning orientation positively impact innovativeness, but that entrepreneurial climate does not. Innovativeness was found to positively impact economic performance. The authors outline implications of the findings that may be used by policy makers, landowners and research.
Weblink	http://www.sciencedirect.com/science/article/pii/S0378112708007287

Publication 8	
Full reference of study/publication	**Lunnan, A., Nybakk, E. and Vennesland, B. (2006) *Entrepreneurial attitudes and probability for start-ups – an investigation of Norwegian non-industrial private forest owners*, Forest Policy and Economics, vol. 8, no. 7, pp. 683-690.**
English language summary/abstract	Agricultural policy has in the last 50 years taken much of the risk and the initiative away from Norwegian farm forest owners. Subsidies in agriculture have guaranteed an acceptable income and there has been neither need nor incentives for starting up new activities at the farms. This situation is now gradually changing.The income both from agriculture and forestry is decreasing and farm forest owners have either to move, to find job opportunities outside the farm or to start up new activity at the farm using the farm's resources. Entrepreneurship theory is used to study the question why some farm forest owners choose to start up some new activity based on the forest resources they have.We identify two main elements of entrepreneurship; the ability to recognise business opportunities and the ability to take calculated risk. In a survey to 500 forest owners in southern Norway (response rate 45%), we included questions about opportunity recognition and risk aversion. From the answers, we were able to split the forest owners in two groups, those with entrepreneurial attitudes and those without. Using logistic regression we found a significantly higher probability for start-up of new activities in the group with entrepreneurial attitudes. This result has very interesting policy implications. Many studies show that entrepreneurial attitudes to a large degree can be learnt. The first way of learning about entrepreneurship is through the education system and through courses and training of forest owners. The other way is 'learning by doing', which is most probably the most efficient way to learn about entrepreneurship. Public policy should stimulate more owners to 'do', by that they will 'learn' and that will again lead to more entrepreneurial activities at the holdings.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	☑ University ☑ Public Research Insitiute ☐ Private Research Institute ☐ Other (please name below)
Type of funding used (multiple answers allowed)	☐ Private Industry ☐ Private other ☑ National ☐ Public Sub-National ☐ Public EU/cross-national Europe ☐ Public International beyond Europe ☐ Public other
Regional scope	☑ Sub-national ☐ National ☐ Cross-national Europe ☐ International beyond Europe

Theoretical approach	Entrepreneurship
Methodical approach	Mail survey
Thematic focus	☐ ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) ☑ motives and behaviour of ownership types ☑ new management approaches ☐ policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	Included in the summary
Weblink	http://www.sciencedirect.com/science/article/pii/S1389934105000572

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