



# Final conference of the COST Action FP1201 FACESMAP

7 – 9 September 2016  
Vienna, Austria

## Forest ownership changes in Europe: trends, issues and needs for action

BOOK OF ABSTRACTS



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*(Revised)*

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Significance for Management and Policy (FACESMAP)



EUROPEAN FOREST INSTITUTE  
CENTRAL-EAST AND SOUTH-EAST EUROPEAN  
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# PREFACE

Forest ownership is changing across the world. In Europe, various trends make up these ownership changes, including: institutional changes in Eastern European countries with restitution and privatization of forest land; increasing activities of investment funds in forestry; new community forestry for income or conservation purposes; afforestation of agricultural land; and change in lifestyle, motivations and attitudes of owners towards their forests. Indicators associated with these changes include: less farming, ageing population, depopulation of rural areas, and new objectives and goals of forest owners.

At the same time, forest management objectives are becoming increasingly complex and often include timber production, biodiversity conservation, climate change adaptation and mitigation, and provision of other ecosystem services. As a result of changing ownership and management objectives, forest management practices are also changing. The interactions between ownership type, actual or appropriate forest management approaches, and policy, are fundamental in understanding and shaping forestry, and have been the focus of the COST Action FP1201 FACESMAP. This conference is the final event in FACESMAP, and aims to create a space for exchange of knowledge among researchers working on related topics in Europe within and outside the COST Action.

The conference aims to tackle the issue of changing forest ownership broadly, by including trends and problems, drivers of change, implications for forest management and policy, and possible recommendations. It aims to answer the following questions:

- How are forest owner types in Europe changing? Which new forest owner types are emerging and how can they be described?
- How can these changes be explained? What are the relevant economic, social, cultural or political drivers behind such changes? What are the forest owners' attitudes towards their forests and motivations for forest management?
- What are innovative management approaches for new and emerging forest owner types? How may forest management and the organisation of the forest sector be changing in view of changing forest ownership structures?
- Which policies address the development of forest ownership patterns and with what outcome? What policy instruments are effective in reaching different forest owner types?
- What are the broader implications of changing forest ownership for gender relations, entrepreneurship, rural development, and for diverse European policy goals such as biodiversity conservation, climate change mitigation and adaptation, recreational services and public health, raw material supply for industries, and others?
- What conclusions and recommendations can be drawn for forest-related policies, forest management practice, further education and future research?

The conference aims at analyzing the phenomena and issues connected with forest ownership changes in Europe in a comprehensive way, and thus invites multidisciplinary approaches, including sociological, economics and political science perspectives. This book of abstracts includes most of the conference presentations from the plenary and parallel sessions. The conference programme can be found in the Annex of this publication.

Many thanks to all the contributors to this highly interesting conference!

The organizing committee



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Keynote presentation

# Asking Questions and Listening to Stories: Reflections on Three Decades of Forest Ownership Research

John C. Bliss

Professor Emeritus, Oregon State University, US

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## Introduction and background

It is a great honor to be invited to speak with my European colleagues, so many of whom I have interacted with over the past couple of decades! It is just wonderful to review the program and recognize so many names of friends and colleagues, many from IUFRO Small-scale Forestry Working group. This opportunity to speak with you today is personally quite timely, as it marks, to the very month, my retirement from some 35 years of working with, and researching, private forest owners. My assignment as your keynote speaker is to reflect on what I've learned during the course of my career, and perhaps to derive a few lessons for the future of forest ownership research.

This assignment is both flattering and daunting! Flattering because it presumes that I have learned something; and daunting because it suggests that what I've learned might be useful to a European audience. Because very little of my work has been in Europe, I'll be focusing on my approach to learning about forest owners, rather than on research results.

As any good social scientist knows, research results mean little without reference to the historical, social, and environmental context from which they arise. Accordingly, I'll begin by telling a tiny bit of my life story – don't worry, I'll be brief! -- focusing on a few events that have shaped the way I think about research.

I was born, raised, and educated in Madison, Wisconsin; a liberal, cosmopolitan university town in the middle of a rural farm state. I attended the University of Wisconsin, graduating with a degree in cultural anthropology. My father didn't see much of a future for me in anthropology, and so insisted that I also take coursework in education – because at least then I'd be able to get a job teaching! In my final year of college, I met the love of my life, married, and immediately headed to northern Afghanistan for two years of service as an English teacher in the U.S Peace Corps.

There, the education coursework was, I suppose, somewhat helpful, but my anthropological bent was richly rewarded. I spent two years asking questions and listening to stories. As I look back on those years now, I realize that I was in training as an ethnographer, paying attention to as many of the details and nuances of speech as I could understand, not knowing whether or not they may end up being significant.

Leaving the high, arid, treeless landscape of Northern Afghanistan at the completion of our Peace Corps service, I longed for the green farms and forests of Wisconsin, so I returned to graduate school to pursue a Masters degree in forestry. Upon graduation, I took a position with the Wisconsin Department of Natural Resources as a field forester, and moved into the hinterland to practice forestry among Norwegian, German, Finnish, Polish, and Scots Irish dairy farmers.

As the new young government forester in Vernon County, it would not do to just show up at a farm and preach about modern forest management. If I wanted to gain any credibility in that closed, conservative society, I had to learn to listen, observe, and not say too much. I liked nothing better than standing in the barnyard and listening to the stories of these farmers' immigrant parents, who left their European homelands in search of freedom, economic opportunity, and land in the New World. Each shared lessons learned from their parents and grandparents about how to manage farm and forest resources. The Germans prized "tidy" woodlots, in which every fallen branch was piled neatly to dry for the fireplace. The Finns spoke

of the ideal “system of fields and forests” intermixed across the landscape. The forest served as a bank account for the Norwegian settlers. Later waves of immigrants, settling lands passed over by earlier waves valued their forestlands primarily as pasture. As I became more familiar with the landscape, I thought I could detect discernable differences in the woodlots of these different ethnic groups; differences that perhaps reflected cultural norms, values, and behaviors handed down across generations. My cultural curiosity had been piqued!

After 5 or 6 years of this grassroots education, I decided to pursue my curiosity more purposively by enrolling in a Doctoral program. I resigned my position with the state, and kicked off my new academic venture by attending the 9<sup>th</sup> World Forestry Congress held in Mexico City in 1985. There, I met prominent Yale University Economist James Yoho, and sought his advice on my research topic. I still remember his exact words: “You’ll be adding your dissertation on nonindustrial private forest owners to a mighty high pile!” This was not the encouragement that I had hoped to hear! But he was right; already the body of literature on private forest owner behavior was huge. I determined that I would not spend the next several years of my life laboring to just adding one more piece of paper to the pile – I wanted to somehow make a significant contribution. But I had absolutely no idea of how!

At that time, essentially all landowner studies in the U.S. were by economists, they were survey – based, they asked the same questions, and they produced essentially the same results, over and over again:

- owners of larger ownerships are more likely to harvest timber than small owners
- more educated owners are more likely to have management plans
- owners are old, and getting older!

And so on and so forth. You all are familiar with these sorts of surveys, and these sorts of results. Such surveys have been tremendously helpful to government agencies, quantifying the dimensions of the private forest resource and identifying key characteristics of forest owners; information that was, and still is essential to sound resource management policy.

Yet, while they told us many useful generalities about the forest-owning population, they shed very little light on the complex mix of attitudes, beliefs, prejudices and habits that make up individual human beings. And for me, they lacked the richness and depth of those barnyard conversations I had so enjoyed, and from which I had learned so much. And so it was that, one day in a landscape architecture class, I had an “Aha!” moment with the realization that perhaps the reason that so few new insights into landowner behavior were being generated was that individual owners weren’t being studied. We knew a lot about the population of landowners, but not much about individual owners. Because we had applied only one research approach, we had limited ourselves to the insights that approach was capable of producing. Maybe a different approach would yield new insights into landowner behavior. Maybe my anthropology education had not been a waste of time after all!

At the time, the early 1980s, very few anthropologists were working on forestry issues, and they were mostly working in the developing world. I thought, why not apply anthropological methods to researching private forest owners in the U.S.? So I dove deeply into the literature on ethnography, qualitative research methods, grounded theory, case study research, open-ended interviewing, and analytical coding. These became the tools that I would use for my doctoral research on “Motivations of Nonindustrial Private Forest Owners; A Qualitative Approach.” My highly complex and terribly sophisticated research tools consisted, essentially, of asking questions and listening to stories. And the application of those tools did not disappoint. My somewhat skeptical dissertation committee, comprised mostly of forest economists, began to appreciate the value of these tools as they yielded new insights into what leads forest owners to do what they do. I learned that, yes, economic considerations are important predictors of landowner behavior, but they are mediated by a host of other critical considerations, including;

- Personal, family, and ethnic identity
- A strong desire for autonomy, or control over resources,
- Diverse family needs and aspirations

- The desire to leave a legacy

These insights may hardly seem new today, but in the 1980s they were met with considerable skepticism because they broke with the dominant paradigm of economic rationality, which said, essentially, “Tell me an owner’s financial status and the value of his forest assets and I will tell you all you need to know about his management.”

### **Mix it up**

So the first lesson I want to share is that different research methods produce different insights. The old saying, “If your only tool is a hammer, every problem looks like a nail,” applies to social research as well as carpentry. Much, perhaps most ownership research is still survey-based, with all the strengths of that approach. The semi-annual landowner surveys that many countries implement provide essential data on landowner populations. The time series data they produce is invaluable in tracking changes in owner characteristics. Surveys are the appropriate method for answering the “how many?” and “how much?” and “how often?” questions: How many owners are there? How much forestland do they own? How often do they harvest or plant or hike? If you know what you’re looking for, and what you are looking for is an estimate of the distribution of a trait in a population, a survey is the research method of choice.

Surveys are far less effective in addressing the “Why?” and “What?” questions: Why do you hold forestland? Why do you feel that way? What is important to you? And the anthropologist’s classic open-ended question, “What’s going on here?” Surveys are ill-suited to situations in which you aren’t sure exactly what you’re looking for, you don’t know what may be important, or if the issue of interest is not readily quantifiable. In these situations, some sort of qualitative approach is likely to be more effective, utilizing such methods as open-ended interviews, participant observation, or focus groups.

It strikes me that there is a relevant analogy here in the medical profession. Medical professionals have become extremely sophisticated at collecting and analyzing data from blood tests, urine tests, MRIs x-rays, and other tests. We see one specialist for our digestive system, another for our heart, a third for eye, ears, nose and throat. The medical system reduces the human being to a collection of symptoms. How many of you have had the experience of wishing that someone in the health care system would pay a little more attention to the totality of your being?

Similarly, survey research deconstructs individuals into their attributes; age, income, gender, and so on, from which are then reconstructed population distributions and averages. Any human attribute which cannot readily be reduced to a numerical statistic gets either relegated to footnotes or ignored altogether. In a real sense, although the researched population comes into focus, the individual human being disappears.

Now, I don’t wish to do away with survey research any more than I want to do away with the medical specializations that may one day save my life! But I do see a need for examining the entirety of an individual, in the context of his or her social and environmental circumstances, in order to better understand their aspirations, attitudes, and behavior. Every research approach has strengths and weaknesses. The point is not to favor one over the other, but rather to let the research question drive the approach and methods to be utilized. And, where time, resources, and expertise allow, mixed methods approaches can capitalize on the strengths and compensate for the weaknesses of the individual methods employed.

In my work, I’ve found variations of the case study approach to be especially rewarding. My students and I have applied the approach to issues of forestland tenure, community forestry, agroforestry, and private lands policy all over the world. Case study research has long been a staple in the fields of law, medicine, business and education. More recently, case study research and other types of trans-disciplinary collaboration are being utilized to tackle the really complex issues of natural resource management and policy. The skepticism I regularly encountered from forestry colleagues in the 1980s and ‘90s toward the case study approach has diminished

significantly over the past decade or so. Indeed, major research funding agencies now require that investigators employ some sort of multi-disciplinary, inter-disciplinary, or trans-disciplinary effort. Unfortunately, the logistics and expense of managing a project involving multiple disciplines, experts, and institutions can be overwhelming. My personal opinion is that we have yet to figure out how to achieve true inter-disciplinarity in either research or education. Our institutions are certainly not structured to promote it.

I have tried to deal with this challenge by cultivating a broad curiosity among my students, and what I call an “undisciplined” approach to thinking about issues. Through developing a case study, they must explore the social, historical, and ecological context within which the phenomenon under study exists. This builds appreciation for the significance of multiple disciplines, types of data, and methods of data collection and analysis. In effect, it cultivates trans-disciplinary thinking within the researcher.

### **Try a little theory**

It took me a long time to learn the second lesson I want to share with you. I have always considered my research to be much more applied than basic. I was motivated by the desire to understand forest owner behavior in order to devise better forest policy and programs. No one ever accused me of being too theoretical! In fact, I was pretty ignorant of social theory, and instinctively gravitated toward a grounded theory methodological approach to research, in which one builds original theory from the ground up with each new research project. I still find this approach tremendously rewarding, but I’ve come to recognize how much our field has to gain from the rich theoretical frameworks of anthropology, sociology, and social psychology, to name only a few relevant fields. Much ownership research, like much of my own work, is a-theoretical. This limits our ability to generalize from our results, and limits the contributions we can make beyond our small community of interest.

Two theoretical frameworks have been especially influential to my own thinking about forest ownership. The first is land tenure, the dynamic system of rules and traditions that govern ownership, access, and rights to land and its resources. Land tenure provides a language for analyzing interactions between society and natural resources, and for comparing them cross-culturally. Studying the extraordinarily rich variation in land tenure systems around the world can prevent one from assuming that the land tenure relations of one’s own culture are somehow “natural”, inevitable, or unchanging. Knowing that rights and responsibilities in land represent a continually evolving social agreement is key to understanding policy conflicts in the natural resource arena.

A second theoretical framework, political ecology, builds upon the land tenure framework by focusing on how economic and political power is distributed within society. It views a society’s land tenure system as a means for distributing wealth and power. The political ecologist asks, “How does the distribution of power in this society influence the ecosystem in which it resides? Who has power in this situation? Who might gain from a particular policy? Who might lose?” It is relevant to mention here that forestry researchers have power by virtue of their training and position, and this power influences both how they perceive landowners and how they are perceived by landowners. Being cognizant of one’s own position in the power spectrum of a social system is prerequisite to understanding its political ecology.

These two theoretical perspectives, land tenure and political ecology, have proven to be critical in our research on public opinion, landowner behavior, community collaboration and conflict. My suggestion is not that these are the only theories applicable to forest ownership research, but rather that much of our research could be strengthened by a more rigorous application of appropriate social theory.

### **Remember: They’re people**

Much forest ownership research seeks to simplify the tremendous diversity among forest owners

by creating typologies of owner types. Finding patterns in complex data sets is, after all, a central objective of most social science research. Often, in ownership research, its primary purpose is to understand owner behavior so that it can be modified to suit some agency purpose. This isn't necessarily a bad thing – indeed we all want our work to be useful. However, starting from the perspective that “we want to understand you so that we can manipulate you” can be pretty limiting to gaining a deep understanding of owners. Over the years I've become quite skeptical of forest owner typologies. In my view, their utility is often overshadowed by their tendency to over-simplify, to force complicated human beings into boxes that fit the convenience of the researcher, but do not adequately represent the complexity of individuals. More often than not, they mask complexity, rather than illuminate it.

More pernicious than over-simplified typologies is the attitude which dominated nonindustrial private forest ownership research in the last century, and is still, unfortunately, not uncommon today. This is the view that forest owners are a problem to be solved. Surely, leaving forest management decisions to millions of individual small woodlot owners can only lead to suboptimal results! Imagine the chaos! Fixing the “Small Woodland Owner Problem,” as it was called, required a combination of incentives and regulations to coax and coerce the great, ignorant masses into adopting professional forestry practices. Much research on forest owners is conducted by individuals within forestry agencies or the forestry departments of universities, who, to some extent, share the values of the forestry profession. Inevitably, consciously or unconsciously, those values shape what and how questions are asked and how the results are interpreted. I first realized this pitfall while conducting field research for my dissertation in the mid-1980s. I had selected winners of the Tree Farmer of the Year award, a forest industry landowner recognition program, to interview as exemplars of “good” forest management. Then, for comparison, I asked professional foresters to identify forest owners who were “bad” forest managers. As I interviewed these sorry, hapless folk, I realized that their identification as bad managers taught me more about the foresters than about the forest owners. The management choices of these owners were entirely reasonable, given their context; they just happened to be different from what the forester prescribed.

Work that Brooks Stanfield, Thomas Spies and I conducted in Oregon's Coast Range illustrates how, in contrast to the forestry profession's view, ownership diversity may be a good thing. First we selected a number of watersheds to study to include watersheds dominated by public, private nonindustrial, industrial, and mixed ownerships. Then we mapped tree species, connectivity, patch size, and other proxies of forest diversity. As predicted, the watersheds with the greatest diversity of ownership also displayed the greatest forest diversity. Of particular note was that only the watersheds dominated by nonindustrial private forestlands supported significant stands of oak and other hardwoods – species that were discriminated against on industry lands and underrepresented on public lands.

What lessons do I derive from these observations? First, be cautious when categorizing forest owners; Where did your categories arise? What values do they reflect? Whose interest do they serve? Second, beware of viewing owners as problems to be solved – problems to which some agency, company, or program has the solution. Rather, consider forest owners themselves as resources, and their diverse management objectives a strength rather than a weakness.

### **Upset somebody**

The final lesson I want to share with you I first learned from a natural resource sociology professor of mine at the University of Wisconsin, Dr. Thomas Heberlein. He advised his students that, “If your research is not upsetting somebody, it's probably not very important.” The point is not to go looking for ways to aggravate people, but to recognize that on all significant issues there are bound to be winners and losers – people who have something at stake and therefore care about outcomes. Dr. Heberlein's advice was simply to invest our efforts in issues that somebody cares about, or should care about. In our field of forest ownership research, questions related to power have not been very common. Asking such questions, and then reporting on the results of such questions, runs the risk of offending someone (typically, someone in power). If

our research is funded by public agencies or private corporations we might avoid asking questions that could embarrass them. We end up producing “safe” research that ultimately has little impact.

I have followed Tom’s advice and focused on issues people care about, and the forestry profession has been angry at me for most of my career! They didn’t like it when our survey research found that the environmental attitudes of forest owners in the U.S. Mid-South were, on many points, indistinguishable from those of the general public. They had long assumed that Southern forest owners were much less environmentally concerned than owners in other regions. Forest industry didn’t like it when our work on property tax abatements to the pulp and paper industry in Alabama showed little positive impact on local employment, and a large negative impact on rural schools. And, judging from letters to the editor of the Journal of Forestry, readers concluded that my review article on public perceptions of clearcutting was single-handedly responsible for the decline of the forestry profession!

Fortunately, for most of my career I have worked under deans who value academic freedom, and have had the courage to defend it. This has allowed me to ask difficult questions about controversial topics, analyze the data to the best of my abilities, and publish the results without interference. Of course, tackling controversial topics is risky, but it is unlikely to be boring! And it just might make a positive contribution.

## Closing

Well, enough of my preaching – it’s time to bring this sermon to an end. To summarize, here are the four suggestions I’d like you to consider as you undertake forest ownership research. Again I will paraphrase Dr. Heberlein, “If you agree with me, my lessons are trivial, and if you disagree with me, my lessons are wrong!” In either case, I’ve advocated to:

1. Whenever possible, triangulate from multiple methods, perspectives, and disciplines. Mix it up!
2. Make use of existing social theory where applicable;
3. Remember that forest owners are complex humans that defy simple categorization, and are not mere problems to be solved, and,
4. Invest your energy in questions that someone cares about, or should care about.

In closing I would like to share a more personal reflection. Essentially all of the research I’ve engaged in over my entire career has been conducted in collaboration with graduate students, who I have viewed as equal partners in the work. While I have relished the thrill of discovery, and have enjoyed sharing the fruits of research through publishing, it is the personal relationships I’ve made along the way that have made my career meaningful and enjoyable. Last month many of my students came together in Corvallis for a Bliss Student Reunion. Working with these highly motivated, extremely bright, marvelous individuals has been a real privilege and the greatest joy of my career. If I could give only one piece of advice to you it would be to surround yourself with young people who are smarter than you are, and then invest your time and energy in cultivating their potential. For this you will be richly rewarded.

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Plenary sessions: Selected COST Action FACESMAP results

# Advancing the forest ownership map of Europe by assessing trends of change

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## Introduction

Forests have through history provided essential resources for transformation of the European societies (Delcourt and Delcourt 1987). Until the industrial revolution, the relationship between deforestation and population density and growth is most evident (Kaplan et al 2009), and with the exception of north of Fennoscandia the forests in Europe were in the late 19<sup>th</sup> century devastated (Jeanrenaud 2002:28, Sands 2005: 31-32). Yet, forests continued to play a central role in many rural economies, providing fuelwood, animal fodder, pasture, chestnuts, berries and mushrooms (REF). Also, in some rural areas different types of wood processing, such as production of potash and tar, provided substantial income to local farmers but also to landless people (Jeanrenaud 2002:19).

While the substitution of charcoal and fuelwood for oil and gas in the late 19<sup>th</sup> century, on one hand meant that forest could be re-established, on the other hand it has brought us to a situation where the emission of greenhouse gases has become a major societal concern. Again, forests have been recognized as a key to fulfilling long-term objectives in European societies. In the context of the green economy, the enhancement of sustainable management of the ecological, economic and social functions provided by forests is regarded to be crucial. (EIB 2012, OECD 2011). Through different initiatives, the European community at large, as well as individual countries, has also introduced a variety of policies and supporting (steering) instruments for the protection and enhancement of the forests (e.g. FOREST EUROPE). Some of those have had an European scope and focused on protection issues like Natura 2000 (Evans 2012) while others have been national initiative with an afforestation aim (e.g. the afforestation programs as in Ireland and Poland). The latter has brought about a new type of forest owners; farmers with no previous experience of forest ownership and management. Yet, a more fundamental and far-reaching change in ownership structure is due to the restitution and privatization of forest land in the wake of the fall of the communist regime with the state as basically the single forest owner (Živojinović et al., 2015). Nowadays, various kinds of non-State ownership exist in these countries, having in common a lack of tradition and experience of forest management (Weiss et al., 2012). In addition, sales and purchase of forest land by new categories of forest owners has become an issue in some countries. Yet, to keep the forest within the family, seem still to be the general practice in Europe, although many private forest owners has become disconnected to their inherited forest. As they are no longer living on or off the farm/forest property they can due to this life style change be considered as a new type of forest owner (e.g. Høgl et al 2005).

While various scholars have payed attention to and studied one or more of these phenomena, attempts to assess and compare the multiple change and its drivers within an overall European context are lacking. Therefore, this paper will address this gap of knowledge focusing on four major trends of forest ownership change namely due to i) lifestyle change ii) restitution iii) buying of forest land and iv) afforestation.

## Material and Method

Twenty-four European countries participating in the COST Action FACESMAP (FP1201) have completed a two stage expert assessment of the significance of change during three decades

(1985-2015). The first stage assessment was carried out as part of a country report assignment, where the involved country experts were asked to country specifically assess new forest ownership trends on a 0 - 3 scale (0 = not relevant, 3 = highly important). The predefined drivers were the same as presented above and when reported relevant, countries were asked to add case examples. The results of this first stage assessment were summarized and presented at a workshop where indicators for a proper measurement of the trends and their assessment were discussed.

Based on the collected answers we developed a cross-country comparative assessment of the existing trends of forest ownership change in a European perspective, after which we asked country experts to revisit their assessment (stage two). When trying to base the comparative assessment on solely existing quantitative data, we realized that it would not be possible to achieve a complete picture since many figures are not available for all countries and the data sources are often incompatible. Therefore we had to rely on additional expert judgements. The expert opinions furthermore allowed to go beyond the mere figures to include an assessment of the significance of this trend within the very country situation. Thus, the given significance levels (0-3) assess the specific trends of change in each country when compared to other countries, not compared to other developments in the same country. The resulting maps should give a comparative picture for each trend in a European perspective, they are not to be directly compared with each other.

## Results

### *Restitution and privatization*

The restitution of forests in CEE-ESEE countries had very diverse goals and was implemented quite differently (example: no restitution of forest land in Poland). It is still ongoing in many countries of this region. Until now it caused profound changes in forest ownership structures in most countries of this part of Europe (share of private forest owners raised in many countries from zero to more than 40 or 50% such as in Lithuania or Romania). Privatization of state forests has also taken place in other European countries, but not for high percentages (Norway, Sweden, UK).

### *New forest ownership types through changing lifestyles, motivation and attitudes*

We aimed here to picture the trend to urban or non-traditional/non-farm forest owners, with often different or new goals and motivations for their forests, for instance, non-economic goals, or total abandonment of forest management. This trend is often coined "urbanisation". Indicators identified behind these changes include less farming, ageing population, depopulation of rural areas, as well as new objectives and goals for forest management when, for instance, the forest is not seen as an income source any more. It is mostly relevant in western European countries.

All in all, we see the same trends of urbanisation ongoing across all of Europe, however, to different extent and in different phases. In Sweden, for instance, it is reported that much of this development has already taken place before the recent 30 years (the time period our survey refers to) while in ESEE countries this is rather ongoing as most of the restituted land owners are non-traditional by definition as they did not own any forest land during the socialist period.

### *New ownership through market exchange*

The mobility of forest land on the markets differs greatly across countries. Besides a lively market in some ESEE countries after restitution, some Western European countries (e.g. UK) have higher turnover than others. Sometimes, the buyers are foreign investors (e.g., in EE countries such as Estonia) or investment funds (e.g. in Finland, Romania, Latvia). In some other countries, such as Sweden, Germany and Poland it is more characteristic that existing owners or their heirs buy in order to enlarge their properties.

### *New forest ownership through afforestation*

Active afforestation is mostly relevant in Western Europe (particularly Ireland and UK) and

Eastern Europe (particularly in Poland or Latvia). In many Central or South European countries, but also in Norway, natural succession of abandoned land or where agriculture is not profitable any more also increases the forest area.

## Discussion

In this study, we aimed to give a comprehensive comparison of trends of forest ownership change across Europe, an endeavor not been done before. It was only possibly through the COST Action which accommodated representatives from almost all European countries. We were not able to cover all but with 24 countries from all pan-European regions we provide a quite good coverage.

The gained information contributes to a better and comparable knowledge on the main drivers of ownership change. It thus contributes to the existing summary figures on forest ownership available from the SoEF report, the forest ownership study by UNECE/FAO, or the map of forest ownership by the European Forest Institute. Those datasets are limited to the overall figure on the share of public and private ownership but do hardly give information on the reasons behind.

The limitations of this study lie in the fact that such a comparison across many countries inevitably means trade-offs in the data quality when statistical data are missing for some countries and need to be filled by estimations. In consequence, we use four classes for each criterion (0-3) but do not calculate with real figures. Our two-step process was designed to standardize expert assessments as much as possible and to reach reliable results.

More focused future studies on selected trends might be able to further develop the data quality. Furthermore, a better comparability could be gained through improved national statistics or surveys and relevant international processes such as the Forest Europe data reporting or the FRA. An ongoing survey on forest ownership in the ECE region by UNECE/FAO together with the COST Action also promises to deliver better data.

In summary, the results of this exercise produced a number of interesting insights which were not broadly known yet and they give a more differentiated picture of the four trends of our assessment: The maps of our study make visible the restitution patterns in Eastern Europe and point out privatization processes in other European countries. They picture the European patterns of afforestation and natural succession as well as market exchange of forests. With the accompanying data and interpretation sections we see our study as a reference work for any scholars or experts interested in forest ownership change in Europe, being a valuable European overview for researchers that want to dig deeper, or policy-makers that want to get a quick overview insight of related issues.

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# The dynamic landscape of forest ownership in Europe: what does it mean for society and policy?

## *A synthesis of the FACESMAP findings*

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### Introduction

Forest ownership in Europe is changing, in a variety of ways, and for a variety of reasons which include recent institutional changes in Eastern Europe, changing lifestyles of non-agricultural owners and afforestation. There is little comparative analysis of these change patterns, and their implications, across Europe. This gap is addressed by the COST Action FP1201 (FACESMAP), and this paper provides a synthesis of the lessons from the Action, about causes, trends, and implications of changing ownership, for forest management and for the fulfilment of owners' objectives and policy goals.

### Material and Methods

FACESMAP has over four years (2012-2016) brought together the state-of-knowledge in the field of forest ownership research across Europe, through literature reviews, expert reports on country situations, specific topical analyses by small researcher groups, field visits, and close interaction with stakeholders on European and local levels. The work builds on expertise from 30 participating countries, collaboration with the UNECE-FAO Forest and Timber Section and the Confederation of European Forest Owners, and exchange with forest policy and management practice. The Action used an innovative transdisciplinary 'Travellab' method to facilitate learning from and with stakeholders, through working group meetings in seven countries. The Action prepared 28 country reports (Živojinović et al., 2015), a survey of national contact points designed to contribute to an updated UNECE report on forest ownership, three European-level stakeholder meetings, internal workshops to deepen understanding across disciplines, and an internal online survey to Action participants. A total of 22 small groups of researchers are producing up to 25 papers and book chapters. All contribute to this synthesis of findings.

### Results and discussion

#### *Trends and themes identified*

Analysis of this wealth of data and interaction led to the identification of a number themes, which encapsulate our enhanced understanding of forest ownership change, and policy and practical implications.

1. The variety of trends and causes of changing land ownership. Factors perceived as contributing to changing forest ownership across Europe include:

- restitution in some ESEE countries - where it had very diverse goals and implementation;
- privatisation of state forests in some other European countries;

- market exchange - besides a lively market in some ESEE countries after restitution, some western European countries have higher turnover than others; buyers may be foreign investors or investment funds;
- new forest ownership through afforestation or natural succession on abandoned farmland;
- changing lifestyles, motivation and attitudes – including reduced farming, ageing population, depopulation of rural areas, or new non-monetary objectives for forest management.

2. Simplistic understanding of ownership types and owner categories. There is an increasing diversity of forest ownership types in both legal terms and in terms of owners' motives and behaviour. New ownership types are often labelled as 'urban' or 'non-traditional' owners, but we find that, besides the commonly discussed 'public' and 'private' forest ownership types, there are more intermediary, distinctive and potentially emerging third sector types such as self-organised community groups, environmental and social NGOs etc., which seem to differ significantly and may be worth recognizing in development programmes and policy processes in future.

The current discourse on forest owners rests on dichotomies of traditional vs. non-traditional owners, farm vs. urban owners, residential vs. non-residential owners, etc. Such simplistic categorisation tends to become misleading. Useful typologies have to capture more complex relations and be developed to fit the specific issue and conditions at hand, e.g. to describe forest ownership structures, to understand their motives and goals, to explain their behaviour, to develop service offers or to influence them with policy instruments.

3. Comparable and opposite trends of property rights. Land ownership policies and legal frameworks vary widely; we found relevant legal provisions that directly influence the development of ownership to include: restrictions related to buying or selling forests (e.g. to limit fragmentation, pre-emptive rights for neighbouring farmers, or limits for buying forest by foreigners); specific rules related to inheritance (or marriage), to limit fragmentation or related to community forests; and cases of unclear or disputed ownership relate to restitution processes in post-socialist countries or to weak land registers and cadastres. As well as formal institutions, informal institutions also influence property rights of owners, e.g. shared understanding of owners' rights on the part of owners and the public.

The allocation of property rights to forest owners differs strongly across European countries. Geographic patterns include: stronger official control of forest management in former socialist ESEE countries versus greater freedom of private forest ownership in the West of Europe; more access restrictions for the public in private forests in Southern European countries, in contrast to more widespread public access rights in the North. Historic trends include: recent liberalisation of property rights, in both East and West; reorganisation, privatisation and decentralisation of public forests (e.g., Germany, UK); and market liberalisation of advisory services (e.g., Finland, Romania).

4. Challenge of knowing and understanding emerging forest owner types and forest management styles. Lack and inconsistency of statistical information and forest owner surveys drastically limits the possibilities of a European overview and comparison across countries. The main differences relate to different definitions and methodologies in terms of forest owner types, and of forest land cover. Some countries lack complete land registration or cadastral records (e.g. Scotland, Norway) and official statistics or national records on individual characteristics on e.g. owners' gender are rare. Partly for this reason, knowledge on owners' goals and behaviour also varies widely.

Only a few studies have previously focused on new or non-traditional forest owners, but within this Action women as a category of new forest owners has been particularly recognized. Overall, neither traditional nor non-traditional owners are in any way homogeneous. More information is needed, in particular, on one hand on the linkages between owners' lifestyles and behaviour, and on the other hand on owners' goals relating to the variety of private and public goods, including the range of ecosystem services that forests may provide.

5. Valuing diversity and providing supporting advice and services to new owners. The diversity of

forest owners is often seen as a problem from the policy and forest industry perspective, and the impulse is to change or educate them, or to offer incentives to change their behaviour in the right direction. At the same time, there is a strong lack of understanding of forest owners' goals and motivations, and as a result these attempts are not very successful. An owner's identity and the recognized motivations to preserve forests for future generations could be better recognized in service provision and policy implementation. Diversity and emerging objectives of new ownership types may be served with innovative forest management and forest service approaches, as well as by designing new business models for private forestry.

We hypothesise that overall, owners are becoming more similar to society as a whole. This needs further research, but could increase the potential for forests and forest management to answer to societal needs, if supported by relevant advisory services.

Advisory services and systems have an important role in developing new solutions and supporting forest owners. Different knowledge sharing approaches work best for different types of owners, and our work suggests that a diverse and interconnected system may be most useful. However, such a system possibly does not yet exist. It seems that traditional advice services are less able to effectively reach the diverse group of forest owners. The balance between the more traditional top down 'extension services', privatised advisory services, and peer-to-peer self-help groups, varies with geography and political history. There are pros and cons to each approach, and it is valuable to understand the types and interactions of knowledge services as a whole. There are indications from several countries (e.g. owners' associations and community woodland associations) that suggest that bottom-up and participatory approaches to advisory services are particularly well suited to reach and motivate owners, in combination with regulatory and financial means. An effective advisory service not only depends on the amount of public budget but also its suitability and relevance to the i) policy goals and ii) target groups.

**6. Need to learn about and design effective policy instruments.** Data problems mentioned above lead to a lack of knowledge on effects of policies on different forest owner types, and lack of specific policy instruments tailored to the needs and objectives of diverse owners. Furthermore, policy evaluation is very patchy. This underlies the limited sets of policy instruments that are applied in practice, and attention needs to be paid to the policy response by new and emerging forest owner types. In addition to direct effects via immediate policy response of existing owners, also indirect effects may be significant. Such indirect effects may relate to, for example, land market or generational changes (acquiring forest land), regulation of forest services (diversity of management approaches), taxation and subsidies (comprehension, integration to forestry community), or advising practices (staying active, finding support, forming new coalitions).

### ***Collective reflections from stakeholders***

Feedback from stakeholder workshops highlighted how diverse and complex the current ownership situation is as well as the need to further improve our knowledge on owners' management objectives, their capacity to fulfil those, and the role that money plays in motivating management. Explicit data on the number of forest land owners would help forest-related objectives and measures to be included in the Rural Development Programme, because the number of beneficiaries would help estimating potential impacts.

Stakeholders found it useful to learn about different types of forest owners, their objectives and motivation, and how these patterns are evolving; to separate forest management and ownership; to explore ownership in more detail than the simplistic division of 'public' and 'private' whilst recognising a need to keep these higher level categories; and to learn more about how forest owners take decisions in a bottom-up way, conducting their own research or engaging in peer-to-peer learning; and to consider the implications for advisory services.

### **Conclusions and recommendations**

New owner types are emerging with sometimes new management goals (e.g., non-incomeoriented or environmental goals), attitudes (e.g., regarding forest functions), and skills and capacities (e.g., in their involvement in decision-making or harvesting work). Owners are

diverse, and it may be more useful to offer a range of policy tools and instruments for owners to choose from, rather than to take the more mechanistic approach of working out which category each owner fits, and targeting with the appropriate incentives. The new ways of management may not necessarily require new silvicultural techniques, but certainly their innovative and appropriate application to specific situations. We furthermore should not just think of silviculture / harvesting but also organisational solutions of the forest planning and work or even new business models (e.g. alternatives for property management services with varying levels of outsourcing). The Action shows the need for better knowledge of owners through better statistical information and specific studies on national and European levels, as well as awareness raising activities among policy-makers through seminars, workshops and the like.

**Recommendations for forest-related policies:** A variety of organisational, market and institutional tools, preferably concurrent but at least not conflicting are important in addressing these challenges. New organisational or institutional tools may include new organisational models for forest management, new ownership forms, or new service organisations, but without a viable market for forest based products and services, expectations will likely fall short. More reliable and regularly updated statistical information is needed, and evaluation of policy responses by owners, and impact, should be gained. In order to open up new ways of thinking and new solutions, we encourage a shift of view to a more positive way of seeing the diversity of owners: instead of expecting that all owners should fulfil all different policy goals, success could result if only some of the owners fulfil some of the goals. Policy tools, including incentives and advisory services, would be tailored to this diversity of ownership.

**For forest management practice:** More independent services and business models should be developed to nurture diversity and give owners more understanding of their options. There is a widespread tendency for forest advisory services to assume that owners, especially new owners, are not knowledgeable. Whilst s/he may not have a degree in forest management, s/he will certainly be knowledgeable about some aspects of the forest and his / her motivations for managing it; and will have learnt something from neighbours and fellow owners. Many owners also learn through practice, and adapt their practice to circumstances. We see a need to build more on such practice, and to develop communication from practice to policy.

**For further education:** Social scientists have for decades been calling for strengthening the social education and skills of foresters, and the combined findings of our COST Action only enhance that conclusion. In addition, forestry trainees and graduations will require skills in facilitation and communication, spatial literacy, and abilities to understand co-benefits of forests.

**For future research:** a plurality of approaches is recommended, alongside co-production action research that could enhance understanding of owners' genuine goals and foster innovation uptake. We see that the diversity of owner types has profound impact on forest management and on the fulfilment of any policy goals, a fact which is only rarely included in research so far. Any research connected to forest management and its relation to society and policy would therefore need to include the aspect of ownership. In addition to research into owners and their management practices, we conclude that ownership needs to be included more generally in forest-related research because of its profound implications for management and policy response.

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# A joint learning method to develop better understanding of forest ownership changes across Europe

## *The case study of Cost Action FP1201*

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**Keywords:** *wicked problems, stakeholder, forestry, change*

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## Introduction

In Europe, the longest-running framework supporting trans-national cooperation among researchers, engineers and scholars is COST Action. This framework promotes the joint development of new ideas and initiatives across all fields in science and technology, through pan-European networking of nationally funded research activities. The aim of COST is to close the gap between science, policy makers and society throughout Europe and beyond, taking advantage of advanced multidisciplinary research, in order to build a European Research Area. Within the topic "Forests, their Products and Services", the Cost Action FP1201 – FACESMAP aims at analysing forest land ownership changes in Europe and its significance for management and policy. FACESMAP participants consider forest management as a wicked problem and developed a method to interact with stakeholders in the field. This method was named Travellab and is based on the assumption that non-scientific sources of knowledge are important to certain understandings of forest management. The Travellab method follows the social learning theory (Bandura and Walters, 1963) and assumes that the learner (FACESMAP participants) is not a passive recipient of information as cognition, environment, and behaviour all mutually influence each other. The objective of the method is to allow a better understanding of the diversity of forest issues across Europe, and also what stakeholders can and cannot discuss, and from this to compare 'typical (local) forestry problems' with the 'European scale'. The method also intends to explore how participant' perceptions change throughout several field trips and interaction with diverse stakeholder. The main research questions are:

1. What did participants learn from Travellab?
2. What is the added value of Travellab to the cumulative understanding of participants of each working group questions? and;
3. Did this added value come from Travellab?

## Material and Methods

The idea of the Travellab within a COST Action framework has emerged around the question of how to pay tribute to the complex relationships between the traditional and the modern parts in transforming modes of ownership issues and attitudes of nowadays. It developed while searching for a methodology to link and include the manifold possible ways of thinking and doing within the increasingly changing of forest ownership in Europe. The word Travellab is composed by 'travel', because it is about field visits in different countries undertaken during the COST Action meetings, and by 'lab' because most interaction with stakeholders which in a living laboratory (forest), where learning occurs. The methods has been constantly adapted and further developed in

course of this specific kind of “travelling”. “Travellab” was, therefore, defined as joint learning processes from facilitated interaction between stakeholders relevant for the objective of the COST Action. The Travellab was set up as a method to interview forest owners and other stakeholders “*en route*” and involves a several stakeholder interaction methods:

- 1- **Training workshop to develop the Travellab concept:** The group attending the workshop collectively came to an agreement on the future design of the Travellab and commonly planned together with the host for the FACESMAP meeting;
- 2- **Selection of local stakeholders:** Local stakeholders were contacted by the FACESMAP participants responsible for hosting the meeting. Stakeholders were selected by snowball sampling.
- 3- **Methods to interact with local stakeholders:** Each working group formulated questions for discussions with local stakeholders. The Working Group leaders were responsible for distributing the tasks (e.g. note takers, interviewers). The questions were prepared within working groups and the Working Group theme was taken into consideration in the formulation of the questions.
- 4- **Interaction with European level policy-advisors:** Three workshops were held with policy-advisors. The first workshop was designed in order to capture the main issues associated to forest ownership changes in Europe from the policy-advisors’ perspectives. The second workshop preliminary results from the Action were presented to policy-advisors and they were given the opportunity to express their reactions to the results. Similarly, the last workshop presented the final results and these were discussed with the stakeholders.

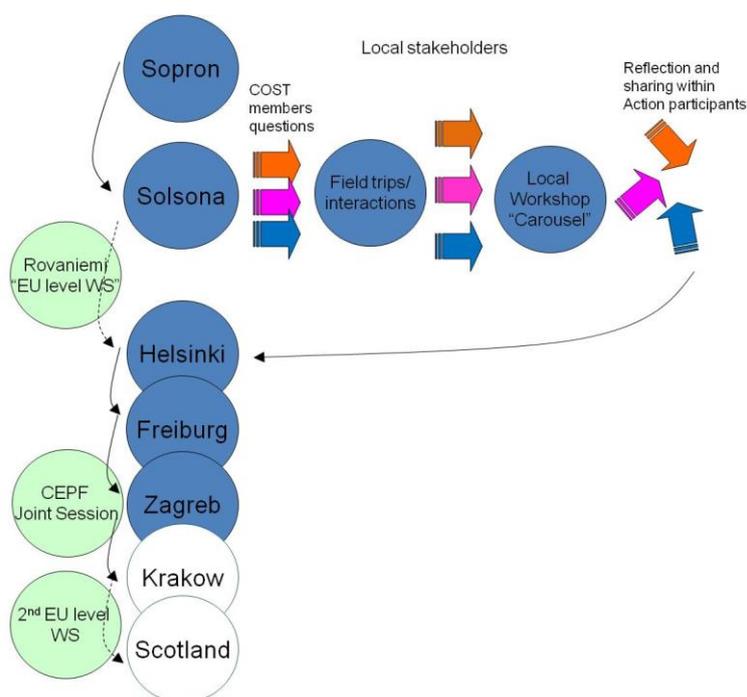


Figure 1.: The Travellab process

Observations made by Travellab participants were written during the fieldtrips and submitted to Travellab sub group leader. Working group leaders also recorded participant reflections in relation to each Travellab in working group meetings, and submitted these notes to the Travellab task group leader. Finally, two workshops were held with participants; one in Solsona (2<sup>nd</sup> FACESMAP meeting) and Inverness (last FACESMAP meeting) in order to capture their opinions regarding what was learnt with the Travellab as well as its added value. These notes were analysed using NVivo, which is software for qualitative data analysis.

## Results

### 1. What did participants learn from Travellab?

Themes	Quotes from participants' notes The good discussion about the history and management plan between the group, owner and the advisory service representative."
Local context	"Welcome words, while introducing the region, people listening carefully." "Information of stakeholders was good structured – from concrete cutting site, management area and Finland in general."
Silviculture issues	"Mainly clarifying questions to understand specifics of thinning approach, finding and convincing forest owners to join project, cooperation." "First questions were related silviculture and forest management (important, but not related to main task)..."
Forest owners types and values	"...this forest owner says that money is not so important, but the very good and revealing question about three wishes showed that monetary basics are very important." "The sensitive issue of forester's professional dignity evokes attention again."
New forest management approaches	"Very interested and attentive audience when explaining the local forest advising practices." "Also issues related to the management plan were discussed." "Absent forest owners hire more the contractors because they need someone to do the work for them."
Forest policies	"Main points of interests and driving forces of Croatian Private Forests were restitution process and green tax and these two topics were most interesting for the group." "Many questions about FMP's role and degree of freedom for management activities. (Mainly to larger owner, the owner with the small estate got fewer questions)."

**Source:** Participants' field observation notes.

## Discussion

The Travellab was considered a valuable process by FACESMAP participants. The method allowed a better understanding of the diversity of issues related to forest ownership, management and policies across Europe. The method can, therefore, be reproduced in other COST Actions or project meetings where participant numbers in field trips are usually high and the time span for keeping participants' attention is usually low. Because most of FACESMAP participants were involved in formulating questions, the interactions with local, regional and European level stakeholders were very lively and favoured knowledge exchange. The qualitative data collected through the Travellab method can be analysed and used for a preliminary assessment of the main issues around the topics investigated and to develop questions for further research.

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## Degree of freedom in private forestry

### *A property rights analysis across 26 European countries*

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## Introduction

Despite an apparent widespread acknowledgement of the criteria and indicators governing sustainable forest management across Europe (State of Europe's Forests, 2007), the diversity of national, legal, cultural and historical contexts has led to very different levels of restrictions being imposed on the interaction of private owners with their forests. Management paradigms such as "sustainable yield" which looks primary at sustainable timber production, "multi-purpose forestry" which emphasis multiple goods and services and "ecosystem management" which prioritise the ecological state of forest ecosystems create the context in which a regulatory framework is formulated at and imposed from the national and regional level (Winkel et al., 2009).

The forest policy framework institutes *de jure* property rights distribution and impacts on the economic, procedural and decisional freedom of owners. This paper employs a "degree of freedom" index as to characterise the policy approaches employed to regulate private forests of individuals in 26 European jurisdictions.

## Material and Methods

In 21 cases the legal framework is created and analysed at the country level, while in 5 situations regional influence are important and represents the level of analysis (Wallonia – Belgium, Catalonia – Spain, Veneto – Italy, Aargau – Switzerland and Scotland – UK). The legal prescriptions have been identified for private forest belonging to individual owners (PFO) and for “normal productive forests” thus not addressing regulations that may apply in specific cases (e.g. protected forests). The distribution of property rights uses Schlager and Ostrom’s (1992) framework as its basis. We built thirty-seven indicators to estimate the degrees of freedom across 5 property rights categories: access rights (1 indicator assessing the legal right of owners to enter their forest land), withdrawal rights (11 indicators regarding the right to harvest or remove timber and non-timber forest products), management rights (13 indicators regarding the right to plan internal activities and transform the forest), exclusion rights (7 indicators looking at the legal prescriptions to prevent the access and harvesting of external users) and alienation rights (5 indicators regarding the right to sell forestland and forest products). The level of restriction for each of the indicators in each jurisdiction was assigned using an expert analysis of legislation that directly affects a private forest owner’s interaction with their forest property. Therefore, the assigned level of restriction for each indicator is grounded in the formal legislative requirements and does not assess perceptions of the *de facto* situation.

To assure that the indicators cover a complete and full catalogue of the relevant alternatives, data collection and analysis took place in different stages i) a questionnaire has been sent to national representatives with experience in forest policy in the context of the FACESMAP COST Action; the questionnaire had predefined categories for each indicator and a section where the particular situation of the country/region has been described ii) the post-hoc analysis of the answers resulted in the complete set of alternatives for each indicator, identifiable across the analysed regions; iii) under each indicator the alternatives have been sorted out in an order to reflect decreasing decisional freedom of forest owners; iv) each indicator was categorised from “no restrictions” (100% freedom) to “fully restricted” (0% freedom) with intermediate restriction levels being present; v) as the inter-alternative distance cannot be presumed linear in all cases, the weighting of the intermediate categories is based on an expert panel formed by 11 experts from different regions and scientific backgrounds.

As a result, the values assigned for the full set of indicators were summed thereby resulting in a quantification of five sub-indexes, representing the degree of freedom (out of 100%) in exercising the five categories of rights. The Property Rights Index (PRI) was calculated as a weighted average of the five sub-indexes considering the operational importance of each right represented by the number of indicators which characterises them: access right (A- 3%), withdrawal rights (W-30%), management rights (M-35%), exclusion rights (E-19%) and alienation rights (AI -13%).

## Results

The overview of the of the forest policy / regulatory framework across 26 European jurisdictions quantified as the PRI (figure 1) shows that the property rights are more flexible and allow more forest owners’ empowerment in the West, while the supervision of forest owners’ actions by the State is still present in many post-socialist countries for harvesting and management rights.

Country / Region	Category of rights					PRI	Rank top down
	A	W	M	E	AI		
	share of freedom out of 100%						
Austria (AT)	100	89	71	72	85	79.1	3
Belgium (Wallonia) BE*	80	75	79	78	100	80.3	1
Bosnia and Herzegovina (BIH)	90	45	24	37	85	42.6	24
Bulgaria (BG)	90	35	28	39	85	41.6	25
Croatia (HR)	90	26	31	48	96	43.2	23
Czech Republic (CZ)	90	58	47	50	100	58.9	15
Estonia (EE)	100	73	65	88	96	77.0	4
Finland (FI)	100	73	78	34	90	70.3	9
France (FR)	90	70	61	96	85	74.1	6
FYR Macedonia (MK)	90	54	30	51	65	47.6	20
Hungary (HU)	100	52	18	67	85	48.5	19
Ireland (IE)	90	57	55	78	100	67.0	12
Italy (Veneto) – IT*	90	39	59	78	100	62.9	13
Latvia (LV)	100	62	65	70	100	70.8	8
Lithuania (LT)	90	67	51	49	85	61.1	14
Norway (NO)	100	73	79	40	65	68.4	10
Poland (PO)	100	54	25	72	100	54.5	17
Portugal (PT)	100	66	75	56	100	72.8	7
Romania (RO)	80	31	16	85	85	44.4	22
Serbia (RS)	90	30	16	35	96	36.6	26
Slovakia (SK)	100	57	25	57	96	52.4	18
Slovenia (SI)	90	45	28	50	85	46.4	21
Spain (Catalonia) ES*	90	80	73	85	85	79.7	2
Sweden (SE)	90	79	73	31	79	68.1	11
Switzerland (Aargau) CH*	100	56	58	29	100	58.5	16
UK* (Scotland)	90	78	76	54	96	75.5	5

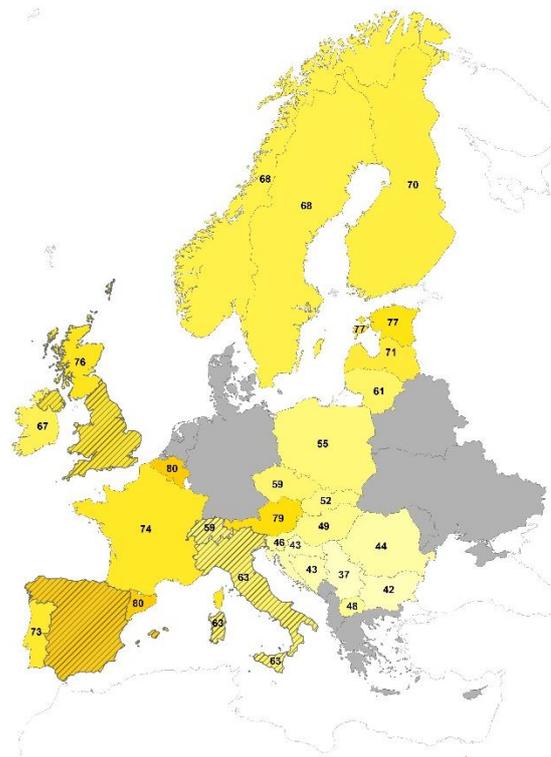


Figure 1.: Overview of the index, with details per country

The calculation of sub-indexes and PRI allows for analytical cross-country comparisons on the distribution of property rights between the private domain and the public interest. The jurisdictions with the higher scores (AU, BE\*, ES\*) have granted more rights for all five categories while in the Nordic countries (FI, NO, SE) even though they have a higher degree of freedom for withdrawal and management rights, the exclusion rights are poorly granted.

Access rights are generally fully allowed but some temporary restrictions may apply for health and safety reasons (CZ, IT\*, UK\*, FR, LT, ES\*), forests located in military areas (BG, IE, RS, HR, BIH, MK, RS, SK), in the days of hunting (BE\*), or based on contractual agreements against illegal logging (RO). Some very strict rules regarding forestland management still remain all over Europe in particular concerning land use change and the obligation to assure the forest regeneration after final feeling. Forestland use change has always been a very strategic decision therefore also in some Western countries the change is permitted only for public interest (e.g. FI, SE, NO, CH\*, BE\*, IT\*). Main differences appear in the approach taken towards the need to have a forest management plan and its relation to timber harvesting, situations where post-socialist countries maintain high level of restrictions. Nevertheless, the situation is changing in particular in Baltic countries where legal constraints and state control in general become less visible in the last 15 years. In compensation some post-socialist countries have granted more exclusion rights for public access and non-wood forest products (RO, PL). Full alienation rights for forestland may be altered in some cases by the pre-emption rights in favour of the state or the neighbours.

## Discussion

Amongst many other index intended to depict the institutional diversity (BTI, 2016; IPRI, 2015; EPI, 2015), the proposed index is the first one specially designed for the private forest sector. As compared with other index on property rights (IPRI, 2016) that are assessing social perceptions of a certain phenomenon, the PRI has the advantage of a better objectivity, as far as it relays on the assessment of the formal legislative system. The study confirms the fact that while property

rights is recognised and protected in the same way in the civil legislation of the analysed jurisdictions, the content of the property rights when owning forests greatly varies from a country to other (Bouriaud and Schmithusen, 2005; Bouriaud et al., 2013). These findings open new research perspectives about forest policy processes. For example, the level of policy making is important when deciding the content of the forest property rights due to the policy venues created (Baumgartner and Jones, 1991), rent-seeking opportunities (Nichiforel and Schanz, 2011), dominance of a single coalition in forest-related decisions (Weible, 2006) and even due the policy divergence occurring in law implementation (Carter et al., 2014).

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Parallel session 1: Advancing the understanding of forest ownership

# Understanding the forest ownership in different forest owning cultures

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**Keywords:** *private forest owners, culture, psychological ownership, qualitative research*

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## Introduction

The non-industrial private forest owners (NIPF) possess a major part of Europe's forests (Živojinović et al. 2015). Therefore, their behavior has a significant impact on the development and management of European forest resources. At the same time forest owners' values and objectives are becoming more versatile (e.g., Boon et al. 2004; Karppinen and Tiainen 2010; Kuuluvainen et al. 2014; Ziegenspeck et al. 2004) and it has been suggested that this change, along with more general technological, social and cultural changes in the society, signify a trend among NIPFs away from traditional forestry (Follo 2011). Thus, there is a need to understand more in depth the elements effecting to the new forest owners' forestry behavior.

As pointed out by several scholars "the ownership" as a concept should not be understood only from the legal property rights perspective, but as a dual phenomenon including also certain psychological elements (Etzioni 1991). Further, the psychological feelings of ownership has been identified as important element influencing the forestry behavior (Lähdesmäki and Matilainen, 2014). The mentally construction of the forest ownership is likely dependent on the cultural context of forest owning (Canadas and Novais 2014). In addition, the role of forests in the society and discourses related to it, impact on the meaning of forest owning at the personal level. As this role varies across Europe, it is likely that there are also differences in the construction of forest ownership among the NIPF owners. It can be suggested that the different phases of urbanization, the tradition of land owning or the role of forests in national or regional economics affect the common demands set to the forests, public discussion of the use of forests and thus also the meaning of the forest ownership for the owners themselves. By understanding the role of forest owning culture in the construction of psychological ownership towards forests, it may be possible to better perceive the ongoing changes and deepen the understanding of the reasons for new forest owners' forest management behaviour across Europe.

With a theoretical background in the theory of psychological ownership this paper aims to describe the new NIPFs construction of psychological forest ownership of new NIPF owners from three different contextual settings in Europe, namely Northern European, Central European and Eastern European forest owning cultures. According to this theory the emergence of psychological ownership is related to the fulfilment of three motives of human beings: 1) efficacy and effectance, 2) self-identity and 3) 'having a place' (Pierce et al 2003). As the motive having a place is in practical level strongly integrated with the identity element, in this study, these two

have been analysed jointly. The results show ownership values vary between different forest owning cultures and discuss how these affect their forest management behavior.

## Material and Methods

The data of this study consists of 23 theme interviews from 10 different countries (Belgium (BE), Czech (CZ), Estonia (EE), Finland (FI), France (FRA), Germany (GER), Romania (RO), Slovenia (SL), Serbia (SR) and Sweden (SWE)). The interviewees were sampled through a purposive sampling approach to ensure manageable and informative data. Since the aim was to study the new forest owners, all the interviewees represented the forest owners who have owned their forest less than 5 years and owned the forest holding size typical of the region in question. However, it should be emphasized, that this selection of interviewees was made in order to increase the credibility of the empirical qualitative data, not to foster representativeness.

A joint semi-structured interview guide was created for the interviews. The interviews were conducted during the summer-autumn 2014 in national languages by the international research group. In the analyzing phase, the thematic analysis was used, i.e. the aim was to identify, analyse and report, how the aspects of psychological ownership are constructed in the data. The first analysis round was done by national research teams by using a joint analyzing framework, which was based on the theory of psychological ownership. In the second round the themes raised up from the preliminary analysis were iteratively discussed group and final conclusions were drawn.

## Results

According to the results, the construction of forest ownership was a complex process, in which several elements (legal and political context, family ties and tradition, economical situation etc.) influenced to the dimensions of psychological ownership. However, some differences in constructing the ownership between the different forest owning cultures were identified based on the data. The results also revealed the importance of different routes in generating psychological ownership. The summary of the results is presented in the table 1.

**Table 1.:** Summary of the elements related to the construction of psychological ownership within different forest owning cultures.

Dimension of psychological ownership	Northern Europe (FIN, SWE)	Western Europe (BE, FRA, GER)	Eastern European countries (CZ, EE, RO, SL, SR)
Control	Respect towards private property rights, but on the other hand the expectations to provide benefits for national economy accepted as granted. Tradition of forest management within family affects the management decisions and limits the autonomous control of the owner.	Respect towards private property rights expected. The forest owners feel mentally free to implement their own individual objectives for the use of forest Expectations to provide with nature conservation and environmental benefits globally more accepted	Respect towards private property rights valued, but seen to be violated by the illegal activities and/or authorities. Tradition of forest management within family affect the management decisions and limits the autonomous control of the owner. Traditional gender roles may limit the control of the female forest owners
Identity	Forest used to build the link between self, family and rural heritage Traditional forest owning values visible.	Forest used to build the link between self and family and rural heritage, but the forest owning is not a joint family project. Forest used to build the link between self and nature	Forest used to build the link between self, family and heritage. Forests used to build the landowner identity Traditional forest owning values sometimes visible.

## Discussion

According to the results, the forest owning culture seems to have an impact on how the forest ownership is constructed by the owners. The differences found from the data between different forest owning cultures relate especially to the identity dimension. However, the forest owning culture also affected to the experienced control over the forests. It can be assumed that the more important the forestry is in national economy, the more the normative structures influence on the individuals' psychological views.

In the Northern and Eastern European cases the tradition to use the forests similarly as the past generations did, seem to limit somewhat the forest owner's perceived decision making power concerning the management. However, this was less the case in Central European examples, where the forests were regarded more as an individual project, in which individual values could be manifested. This may indicate that the values of the forest owners are changing slower in Northern countries, where the forests still have a major role in national economy and urbanization is less progressed. Therefore, it can be speculated, that in a more urbanized society truly personal motivations have a more essential role. On the other hand, the tendency to provide with environmental common goods may originate more from individual "modern" motivations.

The role of the forests as a link to the family or heritage was very important in the whole Europe, also in the East, regardless of the collectivistic era. The forests were used to build owners' identity in relation to their heritage. This link has perhaps been underestimated as an objective for forest owning and also in the current extension service provision. However, there were also minor differences between the different forest owning cultures in the forests' role in identity building. In Northern Europe, the forests were used to create an identity of "traditional forest owner" aiming at wood production and using own time and effort to the management. In Eastern European cases, forests also contributed to land or property owner identity in general and the fact that the land property was a forest was not that important. In Central Europe, the identity building via forests related to nature and environmental conservation.

Having an ultimate control over one's forests was seen important among all the interviewees. However, there were indications that the role of own control was especially highlighted in Eastern European countries. This may originate from the fact that the interviewees experienced that their control power had been violated by illegal activities or the strict governmental regulations for using forests.

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# Family forest owners of the USA

## *Life cycle and cohort effects*

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**Keywords:** *National Woodland Owner Survey, Generations, Age, Random Forests*

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### Introduction

Globally, 18 per cent of forests are privately owned, but the country-level percentages range widely from nearly zero in many African countries to well over 50 per cent for many European countries. In the USA, 57 per cent of the forestland is privately owned and of this acreage nearly two-thirds is owned by an estimated 11 million families and individuals, collectively referred to as family forest owners. Understanding the factors influencing these owners' attitudes and behaviours is imperative for designing effective programs and policies. Relatively little attention has been paid to how the relationships between owners and their forests change over time or how changes occur when land is transferred to the next generation of owners.

One lens for understanding temporal population changes is examination of life-cycle, cohort, and periodicity effects (Smith, 2008; Holford, 2014). 'Life-cycle effects' describe how people behave in different stages of their life, e.g., as children, young adults, parents, and retirees. 'Cohort effects' result from events that affect a generation when they are young and forming their fundamental values, often influencing their attitudes and behaviours for their entire lives. 'Periodicity effects' happen when major events, such as wars, influence all cohorts. Even though it might be difficult to distinguish the reasons different cohorts of landowners make decisions, using these various effects as a framework can help explain differences and similarities among landowners.

There is a paucity of studies addressing life-cycle, cohort, and periodicity effects in the natural resources literature and specifically studies related to family forest owner. But many studies have used the broader attribute of age as a descriptor or explanatory variable. Age has been used to explain differences in family forest owners' objectives (Majumdar et al., 2009), program enrolment (Shivan and Mehmood, 2010), and harvesting behaviours or intentions (Karppinen, 2012; Joshi et al., 2015). For the current study, data from the U.S. Forest Service, National Woodland Owner Survey were analysed through the demographic lenses of life-cycle, cohort, and periodicity effects using random forest models. The material presented in this extended abstract is excerpted from Butler et al. (In press b).

### Material and Methods

The sample analysed in this study consisted of 8,576 family forest owners with 4+ ha who responded to the NWOS between 2011 and 2013 (Butler et al., In press a). The potential respondents were selected using a probability-proportional to size sampling design. The NWOS had an overall cooperation rate of 51.6 per cent and no clear nonresponse biases were detected.

The relationships among cohorts (Pew Research Center, 2016), based on the age of the primary decision maker (Table 1), and the independent variables were tested using random forest analysis. Random forests is a non-parametric modelling technique that identifies important variables based on a series of classification trees that recursively partition the dataset to best predict the distribution of the dependent variable (Hothorn et al., 2009). The independent variables included: size of forest holdings, absentee ownership, education, enrolment in a green

certification, tax, or cost-share programs, having a conservation easement or a management plan, harvesting timber or nontimber forest products, recreational activities, landowner objectives, conservation attitudes, and land transfer intentions.

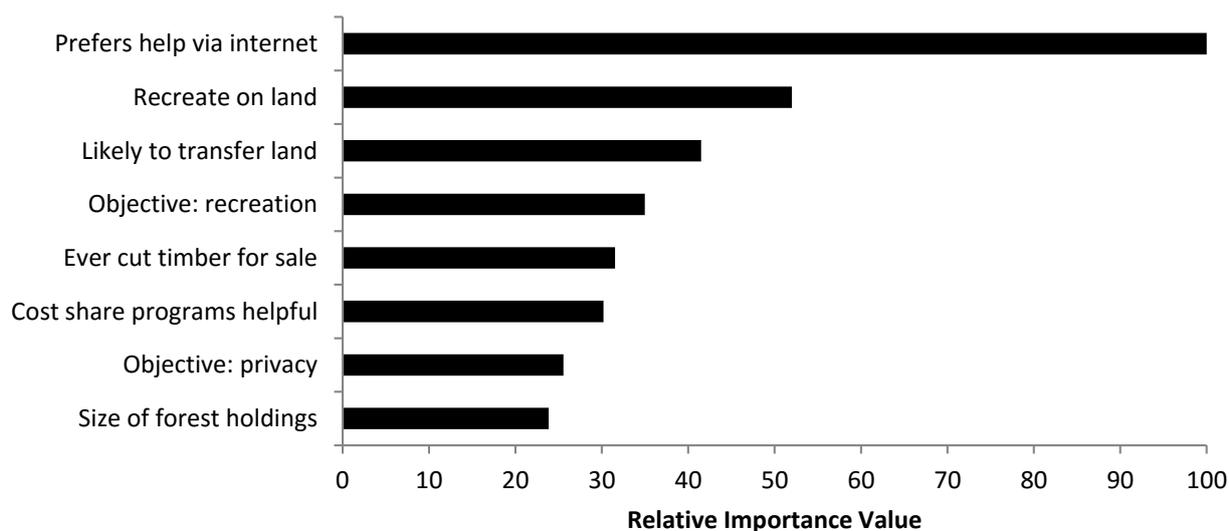
## Results

The distributions of the general population of the USA and the country's family forest owners across generational cohorts are markedly different (Table 1). For the general population, there is generally even distribution across the three younger generations, Millennials, Generation X, and Baby Boomers (U.S. Census, 2011). In contrast, family forest owners are dominated by Baby Boomers and the Silent Generation.

**Table 1.:** Population-level estimates of the cohorts of landowners and sample size used in analyses

Generation	Years	Per cent of general population	Per cent of family forest ownerships	Sample size
Greatest	Born before 1928	1	4	320
Silent	1928 – 1945	12	35	3,119
Baby Boomers	1946 – 1964	26	53	2,340
Generation X	1965 – 1980	32	7	320
Millennial	1981 - present	29	1	34

In terms of differentiating among cohorts of family forest owners, the random forest analysis identified eight variables with relative importance values of at least 20 per cent (Figure 1). The most important variable is if the landowner preferred to get advice or information from the Internet, followed by whether or not the landowner and/or their spouse have recreated on their forestland in the past five years. The other variables, in order of importance, include: if the landowner plans to transfer land in the next five years, recreation as an objective for owning forestland, if the landowner has ever cut or removed trees for sale, if cost-share programs would be helpful, privacy as an objective for owning forestland, and size of forest holdings.



**Figure 1.:** Relative importance of variables from a random forest classification model of generational cohorts of family forest owners in the USA

## Discussion

Life-cycle effects are evident in activities such as recreation and intentions such as plans to sell or transfer land. Cohort effects are apparent in attitudes towards assistance programs. Periodicity effects, such as the economic recession of the 2000s, could not be examined due to a lack of longitudinal data, but future iterations of the NWOS will be able to examine such effects. While some variables distinguish between groups of landowners based on the above framework, it should be noted that many attitudes and behaviours appear to be invariant in terms of life-cycle and cohort effects.

Understanding landowner attitudes and behaviours is critical when shaping educational and outreach programs, as well as policies. The characteristics that differentiate the cohorts of landowners are important to keep in mind when developing or implementing these programs or policies. By discerning which landowner characteristics are functions of age versus generation, policy and program developers can begin to target certain groups of landowners for specific programs. Characteristics influenced by life-cycle effects, or age, can be used when developing programs for the younger or older demographics. Similarly, if a characteristic is specific to a particular generation, the programs can be targeted toward those cohorts where they will be most effective.

Although this analysis focused on family forest owners from the USA, the methods are transferable to other countries. We hypothesize that similar patterns will be found across other countries that are dominated by family forest owners, but additional research is needed. There can be substantial differences in what defines different cohorts of people in different countries, based on unique experiences in their youth. Understanding the differences and similarities among life-cycle, cohort, and periodicity effects across different countries can add insights to the attitudes and behaviours of landowners globally.

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# European non-industrial private forest owners: the art of typology creation and their use

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## Introduction

In Europe, the number of private forest holdings and the area of private forests have increased remarkably since 1990 (State of Europe's Forests 2015)). One apparent driver of the expansion has been industrialization and the subsequent structural changes in the European agricultural sector and the family farming system whereby the connection between family farming and forestry has gradually been dissolving. Fragmentation of forest properties, increased heterogeneity in ownership objectives and the owners' decreased capacity to be involved in forest management due to lifestyle changes, urbanization and absenteeism are some of the reported consequences. Further, a great deal of forest land in several eastern and south-eastern European countries has been subject to restitution and privatization which have had a major impact on the current forest ownership structure (Živojinović et al. 2015). This has contributed to an increasing diversity of non-industrial private forest owners (NIPFs), which has raised policy concerns about the mobilisation of forest resources from the "under-used" non-industrial private forests (Schmithüsen and Hirsch 2010) and also about their ability to provide non-timber services, e.g. biodiversity and carbon sequestration, recreation, scenery and mental health.

The identification of relevant characteristics and the development of categories of forest owners based on their actual or expected management behaviour, has thus become a subject for researchers and policy makers. Inspired by social science and market research forest researchers started building private forest owner typologies. Since Kuuluvainen et al. (1996) introduced the quantitative market segmentation approach into private forest owner research, typologies have become a popular tool in explaining the diversity of non-industrial private forest owner behaviour. Some of the typologies have been based on the structural attributes of forest owners and their properties, while others have focused more on ownership objectives and management behaviour.

The aim of this paper is to review the development of the NIPF typologies in Europe with regard to: research approaches and methods; objectives, policy and management problems addressed; and policy and management recommendations. Furthermore, the paper will assess their use in education and science, and by stakeholders and policy-makers.

## Material and Methods

First, the methodologies used in NIPF typologies published from 1985 to 2015 in international peer-reviewed journals and ranked by the Science Citation Index-expanded (SCI-expanded) or Social Science Citation Index (SSCI) were reviewed. A typology was defined as "a system used for putting things into *groups* according to how they are similar" (Merriam-Webster 2016). In total

30 typologies were reviewed. For those using a quantitative approach, methods and statistical tests for the identification and validation of forest owner types were assessed in detail.

With respect to the content, scientific and practical impact, the literature collected in 28 Country Reports prepared within the European COST Action FP1201 (FACESMAP) was used as the main source of information on the NIPF typologies. In total 57 papers from 16 European countries, covering the period from 1985-2015 and including also grey literature and theses in national languages were identified as relevant. To address the actual use of the typologies an internet survey was sent to the first authors of these 57 papers in order to assess how the given recommendations had been used by policy-makers and main stakeholders. Twenty-four questionnaires were received. In addition to the authors own judgements, a citation analysis was undertaken for all 57 papers using the Google scholar database by calculating the average number of citations per year.

## Results

According to our study, almost three quarters of the NIPF typologies were based on a quantitative approach, 17% were qualitative and 10% used mixed methods. In collecting the data the researchers mostly relied on postal surveys (43%), personal interviews (37%) and a combination of methods (13%). Sample size used to build a typology varied from approximately 30 forest owners in typologies based on qualitative and mixed methods to more than 1000 in quantitative typologies. In quantitative surveys, the sampling design and the representativeness of the sample were often not adequately described. Most of the typologies used partitionial clustering algorithms such as k-means clustering.

The number of studies dealing with typologies has increased over time and also the themes addressed have become more versatile. From 1985 until 2015, the issues of heterogeneity of forest owners due to lifestyle change, timber mobilisation, and how to reach and steer NIPF owners have continuously been considered (see e.g. Normandin 1987, Lähdesmäki and Matilainen 2014). Since 2000 new societal demands including ecosystem services and the methodological issues (see e.g. Ficko and Boncina 2013) have been introduced as themes. From 2004 and onwards typologies regarding new forest owners due to land reforms have been published (see e.g. Vilkriste 2004, Stanislovaitisa et al 2015). Typologies have also been developed to address specific research questions, including inter alia, wood harvesting; forest management approaches (Howley 2013); delivery of public goods (Urquhart et al. 2010) ; new business opportunities and entrepreneurship (Lunnan et al. 2006), and owners involvement in forest owner associations (Petrović 2012). In the papers addressing such specific questions specific policy recommendations were often given.

Only a minority of typologies received more than 30 citations and half of the respondents noted that their paper had been cited less than ten times. The cross-comparison with the citation number at Google scholar showed that authors assessed the level of their citations correctly. The clear majority of the typologies had been used in teaching, for example at the academic level. Only few authors assessed that their typology had been used often by politicians, civil servants or other domestic stakeholders.

## Discussion

A noticeable shortcoming of the typologies is that they do not allow for a cross-country statistical comparison of forest owner types identified in national studies. The owner types can be compared only by the semantic similarity of the labels forest owners were given in the typologies. The most frequently used labels to describe private forest owners in Europe were *Multiobjective owners*, *Recreationists*, *Investors* and *Farmers*. Conducting a standardized survey simultaneously throughout Europe would produce comparable typologies (cf. Schmithüsen and Hirsch 2010).

The studies introducing NIPF typologies only rarely integrate these mental classifications into overt behaviour (Kuuluvainen et al. 1996, Favada et al. 2009; Kuuluvainen et al. 2014). For instance, linking ownership objectives empirically to harvesting or forest management behavior would increase the usability of the results in practice. Researchers could also put more effort to reach the decision makers to introduce their typologies. Sometimes general policy recommendations do not suffice and more specific policy implications and recommendations should be listed in order to get their message through.

It seems that the typology makers have put much attention to the limitations of the methods applied in their studies. Challenges for typologists include identifying new approaches to quantifying owner multiobjectiveness, new fields of typology application such as clustering social networks in which forest owners are embedded, and an upgrade of static surveys to dynamic recurring spatially-explicit typologies. Publishing in high quality journals would increase the scientific visibility and use of the results.

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# How do European forest owners perceive forest management?

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**Keywords:** *management, conceptualisation, private forest owners*

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## Introduction

Forests cover around 47% of Europe's total land area (Forest Europe, 2015). More than half of European forests are privately owned (UNECE/FAO, 2010), mostly by individuals and families with small and fragmented forest properties (Schmithüsen and Hirsch, 2010). Europe's rural landscapes and rural society have changed remarkably in the past decades (Soares da Silva et al., 2016). With the political changes in Eastern Europe during the 1990s, many public forests have been returned to private ownership and this has contributed to an increase of 18% in private forest area in Europe (Forests Europe, 2015). Forest owners have diverse management objectives, changing lifestyles and a weak sense-of-place and attachment to forests represents a significant challenge for policy makers to implement forest policies (e.g. Lawrence and Dandy, 2014). To address this challenge, a wider range of policy instruments such as incentive schemes, advisory services and regulations have been introduced to support the provision of public benefits and to mobilise wood from private forests (Urquhart et al., 2012). Private forest owner typologies have been considered instrumental for creating more effective policy instruments (van Herzele and van Gossum, 2008). In order to look beyond the forest owners' management objectives this study adopts the social representations theory of Moscovici (2008). This theory has been previously used by Ficko and Bončina (2015) to empirically explore how private forest owners conceptualise forest management. This study follows, therefore, a hypothesis-testing approach as to whether social, environmental and economic factors influence the conceptualisation of forest management. The three main research questions addressed are: 1) Do European private forest owners share a common understanding of forest management as a mixture of economic, ecosystem and social components? 2) Do European private forest owners have different level of economic expectations ranging from "no benefit" to "maximization of profit" depending on their socio-demographic profile? 3) Do forest owners from Eastern European, post-socialist countries, have different perceptions of forest management than their Western European counterparts? The aim of this study is to provide new insights on the representations of sustainable forest management in order to better understand whether current forest and rural development policy instruments meet the rationalities of forest owners.

## Material and Methods

Data were collected in Portugal, France, the United Kingdom, Slovenia, the Czech Republic, Slovakia and Romania via telephone, online, mail and face-to-face surveys. Except for the survey in Slovenia, which was completed in 2013, all surveys were conducted within the COST Action FP1201 Forest Land Ownership Changes in Europe: Significance for Management and Policy

(FACESMAP) in 2014 and 2015. Because none of the surveys were financially supported by FACESMAP, different sampling design and data collection methods were used, depending on the resources available to finish the survey within the given timeframe. Respondents were asked to indicate their level of agreement with the 19 statements defining forest management on a standard five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The 19 statements were taken from the questionnaire used in the national study of Ficko and Bončina (2015) and were translated into six languages (English, Portuguese, French, Slovak, Czech and Romanian). Mean values and standard deviations were calculated for 19 definitions of forest management. The most and the least agreed definitions in a pooled sample were identified according to control variables gender, education, country and European region (East/West). This study built upon the empirical study by Ficko and Bončina (2015) in which three forest management concepts were identified, namely maintenance forest management (MAINT), ecosystem-centred management (EM) and economics-centred management (ECON). Classification and Regression Trees were used to study the multivariate relationships between these three forest management concepts.

## Results

Respondents most agreed with the definition q7 which defines forest management as “Preserving the forest for future generations” (mean 4.40), followed by q5 “Taking care of forest health and maintaining resilience of the forest” (4.21) and q1 “The application of knowledge to managing the forest (4.17)”. The least preferred definitions were those related to the economic aspects of forest management such as q16 which defines forest management as “A source of subsidies” (2.44), q4 “A good business opportunity because it provides good financial revenues” (2.88) and q8 “Good opportunity to earn additional money or to improve the family budget” (2.82). Forest owners considered ecological management as the most important (mean value for the ecological management in a pooled sample was 4.1). Maintenance of the forest and forest property was slightly less important dimension (3.8), whereas economic aspects were not important (2.9).

## Discussion

This study goes a step further than the approach taken by most typology studies because it looked beyond the forest owners’ management objectives and used a measurement instrument previously validated through a sequence of structural equation models (Ficko and Bončina, 2015). It has empirically confirmed that private forest owners conceptualise forest management as multi-functional. This three-component conceptualisation of forest management is similar to the scientific definition of sustainable and multifunctional forest management (e.g. Hahn and Knoke, 2014). Nevertheless, it also highlights that maintenance of forests is part of the forest management concept before being connected to materialised objectives. The fact that Economics-centred forest management was ranked the lowest among forest owners questions the effectiveness of wood mobilisation and forest expansion policies in some European countries. One policy at stake is the European Commission renewable energy policy and associated 20% renewable energy consumption target by 2020 which is highly dependent on wood mobilisation from private forests and consequently, of the attitudes of forest owners towards forest management. These results are relative as respondents had to indicate their agreement with the pre-defined statements targeting three concepts defining forest management, namely maintenance, ecological management and economic-centred management. Therefore, it cannot be concluded that the economic value of the forest was not important to forest owners or that they do not need economic resources for a living. This only suggests that making money might not be their primary objective. This study showed that forest owners from the Eastern countries differ from those in Western countries regarding the conceptualisation of forest management. Before the Second World War there were strong cultural and institutional ties between the Eastern and Western part of Europe (Elster et al., 1998). But the emergence of new political systems in the second part of the XX<sup>th</sup> century (Lawrence, 2009) and the forest privatisation and restitution process in Eastern Europe that took place in the 1990s, changed the ownership

structure with the consequent emergence of new forests management styles (Bouriaud and Schmithusen, 2005).

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Parallel session 2: Advisory systems for various forest owner types

# Boosting female forest owners' self-efficacy by means of peer-learning

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## Introduction

The share of female forest owners has been growing in Europe, and in Finland it is 38% (Paaja, 2015). Masculine features, such as male presumptions, and appreciation of strength and effectiveness, have reported to dominate family forestry (e.g. in inheritance, biodiversity conservation and other decision-making practices) (Vainio & Paloniemi, 2013; Follo et al., 2016). Thus, female owners' self-perception as sovereign and capable forest owners needs to be strengthened, which may lead to improved care and responsibility on forest properties. A person's identity is built constantly in interaction with other people, in which the role of "similar others" i.e. peers is essential (see McPherson et al., 2001). Based on the recent empirical research on family forest owners' peer-to-peer learning (Kueper et al., 2013; Hamunen et al., 2015), we hypothesize that female forest owners' interaction with their local female peers will contribute to their activeness as forest owners, and thus promote also societal gains.

This paper reports the first steps of a longer project aiming to test the above hypothesis and to get deeper understanding of the benefits of female owners' peer-learning network. In particular, this paper focuses on which topics and group-dynamic factors have inspired the owners and how the participants learn, share information, and feel in these meetings with peers.

## Material and Methods

We examined a female forest owner group (n=13). They are living in the same rural municipality close to their holdings in northern Savo region in Finland. The group has its roots in a local association of Rural Women's Advisory Organization, and they had earlier formed a network and organized for example a clearing saw training course for themselves. Since the spring 2015, under the auspices of current research intervention, these women have been gathering together for field trips that focus on forest ownership and management. The meetings are facilitated by a forest extension specialist, whose task is to create an arena for women to discuss forest related issues and learn from each other.

In the first meeting, a brainstorming and collaborative cognitive mapping session was organized to gather information of the starting point situation and group members' wishes concerning the upcoming networking activities. During the meetings, an observer took instant field notes about what happened, how the interaction was distributed among the group etc. Based on the field notes, the observer summarized the meeting on a separate form, including observations of the atmosphere, group dynamics, and facilitation aspects including successes and failures of methods and tools applied.

Starting from the second meeting, participants filled a feedback form that enquired after participants' motivations, learnings, feelings, suggestions, and knowledge transfer aspects. Feedback was also enquired from the facilitator in the form of retrospective discussion with the observer, supported by a short feedback form. For this paper, observation notes from the first four gatherings and participants' feedback from gatherings 2-4 were analyzed and summarized.

## Results

The brainstorming of the learning interests and wishes yielded a jointly agreed list of topics and group activities (see Tab. 1). As a general wish, the group wanted to visit each other's forests, hear about the management history and plans, and invite topic specialists to give short presentations and answer further questions. The first few meetings were scheduled and planned in more detail, while the rest of the interesting topics were left to be specified later.

**Table 1.:** Female owner group's learning interests organized as a meeting series

Timing	Topic	Organization
June 2015	Eliciting wishes	Meeting in a house; brainstorming and cognitive mapping
September 2015	Nature and scenic spots	Path walk; a crag, pond shore, retention trees; coffee break at a lean-to
March 2016	Timing of silviculture	Forest walk; snow damage, removing standards, acquiring domestic firewood; coffee break at a gaff
June 2016	Regeneration	Discussion at a final felling site; interviewing an invited expert from Stora Enso
September 2016 to May 2017	Smartphones in forest; generational transfers, forestry equipment for females	One meeting in a house, others in forest, details to be specified later together

In the first meeting, it was observed that the atmosphere was relaxed, obviously because the owners already knew each other. Everybody spoke, the group was active, and the given tasks to discuss in pairs proved successful to generate ideas and interaction between the owners. In the second meeting, the tone remained nice and forest as the meeting venue evoked questions, but there could have been more individuals among the group sharing their own experiences, not only asking. The third meeting observations highlighted that the hosting owners were eager to present their holding and that a small enough group enables a deep discussion. In the fourth meeting, the presenting male owner (husband), who had done most of the forestry work, was actively listened, while the female hosting owner (wife) had less active role. In general however, the well-prepared route across the forest holding evoked questions and opinion sharing within the group.

The female owners' feedback highlighted the joy of being together with acquaintances who share similar interests. The participants praised the nice atmosphere and pleasant coffee break places alongside multi-faceted discussions and the opportunity to ask questions and share opinions. They felt that seeing practical examples in forest was beneficial, and some wished that the facilitator could have encouraged opinion sharing even more. The owners estimated that they had received slightly more useful information from forest professionals than from peer owners, and they further indicated that they had given notably less information to others than what they received (Tab. 2).

**Table 2.:** Participants' average perception of receiving and giving useful information on scale 1-7 (n=7-11) – the higher the ratings, the more information was received or given

Meeting number	Received from peer owners	Received from forest professionals	Shared to peer owners
2	5.3	5.5	3.4
3	5.4	5.9	4.1
4	5.1	5.4	3.7

## Discussion

The studied group of female owners is a genuine and special case, because it was formed in a bottom-up manner before the ongoing project. Therefore it is no surprise that the group had a pleasant atmosphere that encouraged vivid interaction. From the list of topics that were of

interest to the group members (Tab. 1) we may note that the interests fall widely within forestry, and they are not particularly feminine. Complementing the silviculture-related topics, the scenic spots and nature features are characteristic for this group's interests. The present female owners appear to be interested in taking care of the forest and its productivity via being interested in mitigating forest damages and learning about successful regeneration. According to the positive feedback, the solution to select topics from owners' suggestions appears successful.

The group was observed to be interactive with many questions, shared opinions, and joint pondering of action alternatives. This is probably a product of earlier social experiences: the owners did not hesitate to speak in the group they felt familiar and safe. But part of the interactivity may originate from the fact that the other owners were female. The present data does not prove that, but some of the feedback comments refer to the group of females as a special motivating factor. However, from the observation that the husband owner was invited to be an expert presenter in two of the meetings, in which the wife owner remained less active information provider, one may infer that these female owners are only partly confident with their skills and experiences. Giving more space for the hosting female owners to tell about their forests could encourage other female owners to share their views. All in all, our initial hypotheses that female owners' group has a potential to empower women forest owners gets supporting signs.

The group members' perceptions of gained and shared information (Tab. 2) and observations indicate that owners in this group learn from each other quite much, but they are less familiarized with sharing their own experiences compared to listening to others. Courage to tell about views, experiences and concerns even when not feeling as an expert is a feature that peer-learning evidently requires. The facilitator has an important task to encourage opinion sharing.

The participant feedback indicated preference of field trips for the sake of practical evidence. Indeed, experiential learning that peer-groups support is understandably more meaningful in contextual settings. But alongside the substantial learnings on forest management, the present group of female owners also reported benefits from nature and outdoor experience and good company. These co-benefits of multi-faceted peer interaction should not be underestimated, and it may be that also male forest owners would enjoy the similar benefits.

From further analysis of the study material, we will learn about the good didactic practices that can benefit extension specialists, or mentor forest owners, to organize and facilitate peer-learning groups. Preliminary experiences indicate that, for example, using pairwise discussions, prompting actively additional experiences from others, and allowing everybody a clear time to speak may be powerful tools to nurture stable peer interaction. The research project will continue with conducting and analyzing retrospective thematic research interviews with the network members. Those interviews will shed light on the overall learnings and benefits that the group has gained from the series of facilitated meetings.

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# Organization of forestry extension services in South-eastern Europe

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**Keywords:** extension service, private forest owners, forestry, South-eastern Europe

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## Introduction

The changes that have occurred as a result of the transition process had a significant impact on public administration and redistribution of responsibilities in the forestry sector (Lazdinis et al., 2009; Nonić et al., 2014; Nonić, 2015). During this period, the role of forestry organizations was changed, from those that had widespread control, regulatory function and carried out the technical management of forests, to those that are oriented towards the delivery of specific services. This aspect of organizational transition was probably the hardest, because it was necessary to transform the forestry organization from central-planning institutions, which were financially secured and with strong regulatory functions, to organizations whose primary role is to provide services (Schmithüsen et al., 2014; Nonić, 2004; Nonić et al., 2014).

The World Bank study “Forest institutions in transitions: Experiences and lessons from Eastern Europe” highlights that “...modern forest institutions should be service oriented”, provided that in terms of status, there is no clear distinction between state services and enterprises (World Bank, 2005). However, in addition to the traditional, the “hybrid” models, “...which promote partnership of public, cooperative, and private extension services” were developed (Samari et al., 2012).

Forestry extension services in the countries of South-eastern Europe (SEE) are organized on a multiple levels, with different personnel and technical resources, forms of financing, and scope and efficiency of the activities (Živojinović et al., 2015). The **research objective** is to determine the model of organization of forestry extension services in selected SEE countries (Slovenia-SLO, Croatia-CRO, Bosnia and Herzegovina-BiH<sup>1</sup>, Serbia-SRB and Macedonia-MAC), i.e. analysis of legal frameworks and organisational structure, as well as the needs and possibilities for its improvement. The research was conducted in the countries which have gone through many transitional reforms after the breakup of Yugoslavia. These countries are in different levels of relations with the EU, and represent a range of economic, social and environmental conditions.

## Material and Methods

A mix of methods is applied in this research: literature review, secondary data collection (official statistics, internal documentation from relevant institutions and organizations, scientific studies) and analysis, and primary data collection (in-depth interviews) and analysis. Respondents were selected by using judgmental sampling technique. The interviews with decision-makers and experts in forestry extension services, i.e. with the representatives of public forest administration (FBiH-2 interviews, SRB-1 interview), state enterprise (SE) for forest management (RS-1 interview, SRB-4 interviews, MAK-1 interview), extension services (SLO-3 interviews, CRO-1 interview), Chamber (SLO-2 interviews, CRO-1 interview), private sector-licensed forest

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<sup>1</sup> BiH is organized in two entities: Federation of Bosnia and Herzegovina (FBiH) and Republic of Srpska (RS).

engineers (MAK-2 interviews), and NGO in forestry (SRB-1 interview, MAK-1 interview) were conducted in the period March-April 2016.

The questionnaire consisted of 19 questions, which were, among other things, related to: the characteristics of private forest owners (PFOs), their properties and associations, frameworks for providing consulting and professional and technical services, etc. In this paper were only analysed questions related to the framework and organizational structure of the service responsible for advisory and professional technical support to PFOs (Nonić et al., 2016).

Data were analysed using qualitative content analysis, for each of the selected countries, and the comparisons between countries was done by using the matrix tables.

## Results

In the analysed countries, **forest resources** occupy different areas. In BiH, forests cover 2.71 mil ha, in CRO 2.58 mil ha, in SRB 2.25 mil ha, in SLO 1.18 mil ha, and in MAC 0.95 mil ha. Private forests are mostly represented in SLO (76%), then in SRB (47%), in CRO (23%), in BiH (19%), and then in MAC (10%) (Živojinović et al., 2015).

The **main legislative framework** governing the provision of extension services for private forests in selected countries are Laws on forests. In CRO, in addition to the Law on Forests, the Law of the extension service is also significant. In SLO and CRO, the analysed laws stipulate the establishment of public extension services and its activities. On the other hand, in FBiH, MAC, RS and SRB, the laws state that professional and technical tasks in private forests should be carried out by employees of SE (MAC, RS, SRB), or the Association of PFOs, if it employs a qualified person (SRB), or cantonal Ministry through the cantonal administration (FBiH).

**Respondents believe** that the legislative frameworks are, on the one hand, “...not sufficiently developed” (SLO-representative of Slovenian forest service), and that “...do not correspond to current participants in these activities” (SRB-representative of SE for forest management), nor that they “...on satisfactory basis govern this matter” (FBiH-representative of public forest administration). The largest number of respondents believes that “...the legal framework is not bad” (SRB-representative of public forest administration). However, they point out that there is a need for improvement, because “...a more efficient extension service can be established” (SLO-representative of Slovenian forest service), and that it is necessary “...to better define the provision of advisory support, funding sources, etc.” (SRB-representative of SE for forest management).

In selected SEE countries, there are different **organizational models** for the provision of extension services for private forests, from the independent public organizations (such as the Slovenian forest service in SLO or Advisory Service in CRO), through state forest enterprises (SRB, MAC and RS) or public forestry administration (cantonal forest administration in FBiH).

In the past, there was a frequent change of responsibilities of these organizations (CRO and MAC). Forestry extension services for private forests are mostly organized on a three-stage territorial level, with different personnel and technical resources, forms of financing, and the scope and efficiency of the activities implementation. In addition, a part of the tasks in this area are performed (or were performed) by other organizations (Chamber, educational institutions, licensed operators, etc.).

Within the state forest enterprises in SRB and RS, there are services to perform professional and technical tasks in private forests at all organizational levels (General Directorate, Forest estates and Forest administration units).

Advisory Service, as an independent organization, is present in SLO (as part of the state forest service) and CRO (as part of the agricultural extension service). In CRO these jobs, until the formation of advisory service, were performed by SE “Hrvatske šume”. In SLO, the Slovenian forest service performs public forestry services in all forests, regardless of ownership. Advisory service for PFOs is located within the Department of Extension for Forest Owners and Public Relations. In addition, there is Chamber of Agriculture and Forestry, which is also, engaged in

providing extension services. In CRO, the advisory service is organized on two levels and is working through the Directorate (the central part), and the branches at the regional level. Activities in relation to PFOs are implemented through the coordinator and advisor for professional activities within the sector for programs and projects in forestry.

In all selected countries (except in SLO), there are enterprises for state forest management, but their responsibilities related to jobs in private forests are retained only in countries that are not EU members. This approach comes from the relevant regulations that are not fully harmonized with the EU legislation. This is reflected in greater representation of regulatory support measures to PFOs in relation to the economic and informational measures (Glavonjić, 2016, Pezdevšek Malovrh et al., 2015, Nonić et al., 2016).

The majority of **respondents** consider that the condition of the analysed services and the level of provided services are not satisfactory. Those who believe that the status and level of services are satisfactory point out that: "...they are in accordance with the financial resources provided by the government" (SRB-representative of SE for forest management), i.e. that the level is "...in line with the current legislation" (RS-representative of SE for forest management). The main reasons for dissatisfaction are: the insufficient number of employees; insufficient technical equipment; insufficient activities to support the association of PFOs and economic aspects of forest management. The largest number of respondents believes that the obstacles for improving the current state of these organizations are: finances, personnel structure, technical infrastructure and system of organization, i.e. there is "...a need to establish a new system of extension services" (SLO-representative of Chamber). Also, they point out that "...this problem must be solved systematically, which is currently not the case" (SRB-representative of SE for forest management).

Respondents stated several ways to improve the state of services that carry out advisory and professional and technical tasks in the private forest sector: hiring more staff in these activities and their training, extension of services, investment in technical equipment, providing permanent funding sources, taking over part of the activities (e.g. economic consultancy) by other organizations (Chamber or Association PFOs), changing the system of organization, etc.

The attitudes of the respondents towards the possibilities of the improvement vary by country and the degree of development of the system for providing extension services. There are three groups of answers: enlargement of counselling themes (interviewees from SLO), improved organization and financing of the services (interviewees from CRO and SRB), improvement of the institutional and legislative framework (interviewees from FBiH). Respondents from SLO, where an extension service exists, consider that it is only necessary to improve the topic on which PFOs are advised, mostly highlighting the need for counselling on economic aspects of forest management. The situation is similar in CRO, where there is also advisory service, and where the employment of more workers in these jobs is the only proposal. On the other hand, in SRB, where there is no advisory service, and the existing system does not give satisfactory results, the respondents proposed reorganization of services. First of all, in terms of allowing private sector to participate in these activities, or, if this is not possible, through changes in the organization of these services within the public company (SE), respectively, separation of activities related to private forests as an independent organizational unit within the enterprise. In FBiH, where there is no federal law on private forests, respondents highlighted the need for improvement in organizational and legal terms.

## Discussion

In countries with a long tradition of private forestry, the state supports the support system, providing forestry advisory services, expert technical assistance, information, incentives, etc. With the gradual strengthening of private property and the role of owner, one essential part of forestry decision-making is changing, from the once thoroughly competent State, management functions are directed towards PFOs. In "young democracies" public forest administration must establish and build a completely new attitude towards PFOs, while in "old democracies" these relationships have evolved for centuries. Basic strategies and the relationship of the state

administration with PFOs form interests and sources of support for PFOs (Krott et al., 1996).

Analysis of forestry extension services in selected countries showed there are different organizational forms. Similar to the above results, Johnson et al (2007) reported many different models of organizing extension services around the world. Accordingly the governments apply various counseling programs in forestry. Choosing the right model of a public extension service is a very complex and lengthy process. The appropriate model of forest extension service is certainly a systematic process of exchange of ideas, knowledge and techniques that lead to a joint change in the attitudes, practical experience, knowledge, value and behavior, all with the aim of improving forest management (Anderson and Farrington, 1996; Samari et al., 2012).

According to Lexer et al (2005), several needs to improve the status of these services have been identified in Austria: improving the efficiency of service delivery, due to budgetary constraints, combined with the high demand for professional services in forest management by PFOs, the increased demand for information on forest management decision-making, etc., which is all in line with the results presented here. Respondents in selected countries have similar views. They believe there is a need for improving the functioning of these services, especially in terms of strengthening human capacities and technical equipment, enlargement of range service, etc.

Based on the research results, one can conclude that, despite the presence of different models of organizing extension services in selected countries, there is a necessity for better cooperation with PFOs, through the direct contact and identification of their needs and expectations, and through the involvement of all stakeholders.

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# Extension, advice and knowledge exchange for private forestry: An overview of diversity and change across Europe

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**Keywords:** *forest governance, forest management, knowledge exchange, learning institutions, technology transfer*

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## Introduction

Change in forest management is facilitated through communication between stakeholders who encourage, advise, inform, warn, guide, exhort, and educate each other. Traditionally in many countries government extension officers have advised and instructed forest owners. 'Advice' in these cases is the link between policy (government and others' desired outcomes) and (land managers') practice. While there are some parallels with agricultural extension, the situation with forestry is more diverse and complex, partly because a majority of forest owners have no formal background or education in forestry. We propose that the term 'forest advisory system' can be applied to a concept which takes a systemic approach to analysing the stakeholders and their interactions, in forestry advice. The 'forest advisory system' (FAS) is more than the conventional extension model, and involves a range of private, public and NGO stakeholders who may or may not be collaborating with each other.

Our paper is descriptive and analytical, based on a development of three organising ideas: (1) knowledge and information as a system; (2) the distinction between knowledge transfer and knowledge exchange; (3) choice of instruments in environmental policy (Böcher, 2012).

The paper addresses three questions: How FAS are evolving and what affects that? Will FAS be more similar in future between regions and if so why? Will the need for type of advice change in future?

## Material and Methods

Our methodological challenge was to make use of the opportunities to bring together experts from different countries, disciplines and occupations; while having little opportunity for new data collection. Given the lack of pre-existing overview of concepts and change in forest advisory systems, the priority was to establish a shared understanding of dimensions in common, and diverse experiences. The Cost Action provided a context in which the group visited and interacted with forest owners and stakeholders including forest managers, extension officers, consultants, advisers and policy makers, in nine countries, through field trips and stakeholder workshops, keynote speakers at FACESMAP meetings, literature searched and shared among the group, and iterative methods to help participants from very different contexts to develop a

shared understanding and ultimately consensus about the language and dimensions to be include, and trends to be described (Fazey et al., 2014).

## Results

Information about forest advisory institutions and practices in the case countries was systematized into four main dimensions, each of which represent a relevant component and viewing angle of FAS. Table 1 below summarizes the current situation and distinguished trends, supported by a few examples.

**Table 1.:** Summary of current situation, observed trends and examples

Current situation	Trends	Example
<b>Profile of owners</b>		
<ul style="list-style-type: none"> <li>High variation in “pre-knowledge” (from basic notion to quasi-expertise)</li> <li>High variation in primary and secondary socialisation (identity, community)</li> </ul>	<ul style="list-style-type: none"> <li>PFOs are more often challenging prevailing management norms</li> <li>Some call for information on alternative management approaches; some find their own approaches by themselves</li> </ul>	In <b>France</b> , the demand for basic/initiation courses has been stabilizing for the last 6 years (CNPf, 2012). This trend may be interpreted as a transfer of the new forest owners’ demands towards mid of high level or, more worryingly, a real disinterest of new forest owners to forestry education, possibly reflecting a total delegation of the forest management to experts and co-op foresters.
<b>Policy objectives of advice</b>		
<ul style="list-style-type: none"> <li>Influencing PFOs’ forestry practices/behaviour and values</li> <li>Increasing awareness of options and innovations</li> <li>Ensuring compliance with regulation</li> <li>Making PFOs more autonomous in their decision making</li> </ul>	<ul style="list-style-type: none"> <li>More emphasis on specific aims rather than general awareness raising; e.g. profitability, biodiversity, afforestation, cooperation...</li> </ul>	In <b>Finland</b> , specific programs, projects and campaigns have been launched to focus advising to generational transfers of private forest estates (with a further aim to increase wood supply and promote active and more diverse use of forests)
<b>Providers of advice</b>		
<ul style="list-style-type: none"> <li>Government training bodies (generally centrally organised)</li> <li>Professional advisors and consultants (often very diverse and more or less specialized on specific topics), in some countries accredited by the State or within the organization</li> <li>Peer-to peer self-help networks (within forest owners’ associations or in even less informal ways)</li> </ul>	<ul style="list-style-type: none"> <li>Weakening/disappearance of public advisory services, in particular in Eastern European countries where the forest advisory system becomes less and and less centralized</li> <li>Emergence of private forest advisors and NGOs providing advice to PFOs</li> </ul>	In <b>Romania</b> , most of the trainings for PFOs have been organized with the involvement of ENGOS (notably the regional office of WWF). They have focused on the need to respect the forestry regime which is seen as assuring the diversification of forest structure and the promotion of biodiversity. The trainings also focus on the long term benefits of forest uses compared with short term economic benefits.
<b>Approaches and tools</b>		
<ul style="list-style-type: none"> <li>Wide variety of communication channels, and diversity supporting: <ul style="list-style-type: none"> <li>Agent-based tools (through education and training sessions)</li> <li>Traditional publications (magazines, leaflets,</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>From agents-based support to technical-devices support (during field visits and face to face communication, in demonstration forests and workshops)</li> <li>Reliance on PFO’s cooperatives, clubs and networks as platforms for peer-to-peer advice is increasing to</li> </ul>	In <b>UK (Scotland)</b> , the increase in community woodlands since the 1980s, has led to and been supported by the Community Woodland Association, established in 2003. It provides advice, assistance and information; facilitates networking and training, and represent and promote community woodlands

<ul style="list-style-type: none"> <li>o journals...)</li> <li>o New communication and information tools (web, smartphones, e-newsletters, virtual communities)</li> <li>• Cost-sharing varies between Government pays, PFO pays and mixed modes</li> </ul>	<p>complement professional guidance</p>	<p>to the wider world, particularly the Scottish Government. E-newsletters share experiences; and members provide training to other members.</p>
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## Discussion

Our reflections on our findings highlight the following points, which represent the situations we find in our own countries, and the patterns that we find on comparison between countries.

1. FASs include many functions: education, advice, information, technical support, innovation, knowledge sharing, networking, technology transfer, and distribution / monitoring of economic incentives and support. Traditional extension is based on technology transfer (one-way flow of information); the full range of advisory services includes more diverse knowledge exchange.
2. FASs differ across Europe. Amongst our nine countries, we found none where a traditional forest extension service existed; instead, forestry advice is provided by a mix of actors from the state, private and NGO sectors. The policy context in which this advice is delivered, varies widely. The most clearcut variable is the degree of regulatory control exercised by central government. In all nine countries we see a shift towards reduced regulatory control.
3. The components of advisory systems work in both top down and bottom up ways. A major division in approaches relates to whether advice is intended to persuade the recipient to do something (change behaviour) such as plant trees, manage the forest in a particular way, or harvest and sell to a particular company, or whether it is designed to answer forest owners' question and match their personal objectives, attitude to learning and circumstances.
4. FASs are tending to move from a top-down approach to include a wider range of stakeholders, and a focus on horizontal communication (such as peer networks) as well as vertical communication (from government to landowner). They are also moving from a silo approach to a joined-up approach. The content of advisory programmes has evolved from a focus on timber production to include ecosystem services such as biodiversity and recreation. There is a move from public to private sector funding, and an expectation that owners will pay for services such as forest inventory, preparation of management plans, and harvesting plans. The panel of tools has enlarged with the emergence of information technologies which increase the possibilities for decision support systems and interactivity.
5. Overall these changes represent a diversification and liberalisation of information, and an open market in terms of advice. This raises new questions of expertise, reliability and accuracy of information, and trust between actors. PFOs are often characterised as passive, traditional, lacking in technical and policy knowledge, but owners have common-sense and practice-based knowledge, experience in their own forests. It also means the advisory system need stability and skilful educated personnel. Some countries have reacted with a tightening of accreditation methods (Estonia) and importance attached to chartered status (UK).
6. In shifting from the top down approach, and in contrast to the classical concept of extension systems which provided a standardised set of advice, some FASs now try to take into account diversity of forest owner profiles in order to adapt advisory offer and demand. One constraint is that in many countries the providers of advice do not know the owners and their objectives very well.
7. Despite some successes, some difficulties/failures remain in all EU countries: only a low proportion of forest owners attend forestry education programmes. Our sense is that a forest owner perspective would increase the chance for success. If forest owners both experience and feel that advice are given with them in focus, they will be more motivated and active in both learning and management, than if the advice are given with a focus on the societies and EUs objectives.

8. We have explored various ways of looking at patterns of variation. A more detailed and standardised method would be needed to test this fully, but we find no consistent pattern that matches any existing geo-political classification of Europe. There is a tendency for post-socialist countries to have a stronger regulatory approach (Romania, Poland), and a focus on accreditation of advisors (Estonia). We find a tendency for harvesting companies to provide advice to owners in the Nordic/Baltic states, where forestry plays a more significant role in the economy and private forest owners have had a long-standing role in that economy.

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# The social networks of Irish private forest owners; the role of group membership and harvesting behaviour

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**Keywords:** *Social network analysis, egocentric networks, decision-making, information exchange*

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## Introduction

Demand for wood in Ireland is expected to exceed supply by 2 million m<sup>3</sup> in 2020. To address this shortfall wood mobilisation will have to increase, particularly in the private sector, where harvesting rates (from thinnings) are not as high as forecasted. In an effort to increase mobilisation forest owner groups are being established. These groups are structured either as discussion groups or as producer groups, where the purpose of the latter group type includes the organisation of the timber harvesting and marketing process.

To date limited research in Ireland has been conducted on understanding forest owner harvesting behaviour. While internationally this issue has attracted greater attention and the technical barriers to wood mobilisation researched, the influence of social aspects on the behaviour of forest owners has received less attention. One social aspect which may have an influence is the social networks of forest owners, where social networks are made up of individuals who have connecting ties to each other. A perspective on the social network around a forest owner takes into account actual encounters of the forest owner with other persons or organisations in the forestry sector; considering only individual forest owner characteristics and the structural factors of the forest itself assumes that the forest owner is isolated in their forest work and in their decision-making. However, this is not the case.

The aim therefore of the study outlined here is to analyse the social networks of forest owners. A further aim was to compare the social networks of owners according to membership of an owner group and previous harvesting activity.

## Material and Methods

The study area focuses on the south-eastern region of Ireland and includes 13 counties. The total forest area in the study region is 348,233 hectares, which represents 9% of the region's total area. Almost 48% of the study area's forests are in private ownership, most of them younger than 20 years.

Within the study area interviews were held with 33 forest owners who are members of a forest owner group (hereafter referred to as members) as well as with 23 owners who are not members (non-members). During these interviews the forest owners were asked to identify the persons and organisations involved in their social networks and their role in giving forestry-related and harvesting-related information. The social networks were then analysed regarding their size, composition and diversity. The size of the network was measured by the number of forestry-related persons or organisations the forest owner is in contact with. The composition of the network was analysed by first categorising the persons or organisations the forest owners identified as follows: *Professional* – forestry professional who is not part of the owner group; *Teagasc* – public technical advisory service; *Staff* – forestry professional who is part of the owner group; *Family/Friend* – includes neighbour who may or may not be a forest owner; *Logger* – forest harvesting contractor; *Member* – of the owner group; *Forest Service* – regulatory body for forestry in Ireland. The diversity of the network was then measured using Blau's Index:  $(1 - \sum p_i^2)$ , where  $p_i$  is the proportion of individuals who have contact with each of the categories  $i$ . The index

ranges from 0 to 1, where 0 indicated perfect homogeneity and 1 denotes perfect heterogeneity within the study population.

After the participants identified the persons or organisations in their forestry-related network, they were further asked to point out those whom they do or do not trust. NVivo software was used to analyse the transcripts.

## Results

### *Social Network Analysis*

Members of a forest owner group who have harvested have the largest average network size of 8.3 persons or organisations (range: 2-20,  $n=24$ ); non-members who have not harvested have the smallest network with a mean of 4.7 (range: 2-9,  $n=7$ ). The network size between members and non-members, who have harvested and have not harvested, differs significantly ( $P=0.01$ ).

The composition of the social networks is presented in Table 1.

**Table 1.:** Categories of persons/organisations that participants named as a source of information, material or work (a) for forestry in general (b) for harvesting issues. Categories are ordered by the proportion of participants that named the category; Participants are grouped into members/non-members who have harvested/not harvested;

	<b>Harvested Members (<math>n=24</math>)</b>	<b>Non-Members (<math>n=16</math>)</b>	<b>Not Harvested Members (<math>n=9</math>)</b>	<b>Non-Members (<math>n=7</math>)</b>
(a)	Professional* Teagasc Staff Family/Friend Logger Member Forest Service	Professional Family/Friend Forest Service Logger Teagasc	Professional Staff Teagasc Family/Friend Logger Member Forest Service	Professional Family/Friend Teagasc Forest Service Logger
(b)**	Staff Professional	Professional Family/Friend	Staff Family/Friends	Professional Family/Friend

\*For definitions of categories see "Material and Methods"

\*\*The two highest proportions selected

The mean Blau's Index of the social networks of members who have harvested and have not harvested is 0.69 and 0.71 respectively. Those networks are more heterogenic ( $P=0.002$ ) than the social networks of non-members where the mean is 0.60 for those who have harvested, and 0.54 for those who have not harvested.

Most the study participants trusted those persons/organisations who did not commercially benefit from it, hence participant expressed greater trust. The general perception is that this is the case with forest owner groups, neighbours, and Teagasc.

## Discussion

Compared to other studies (Knoot and Rickenbach, 2011; Korhonen et al., 2012; Kittredge et al., 2013) the average size of the participants' networks can be considered large. It reveals the forest owners' dependence on other sources of information and assistance and reflects the lack of forestry-related knowledge and training among Irish private forest owners. Given the self-reporting nature of the process used the number of persons the participants identified in the network should not be interpreted as the complete list. This is because self-reporting participants tend to forget persons that are not well embedded in a structure (e.g. an event or an ongoing interaction) (e.g. Bernard et al., 1984). Nevertheless, the persons/organisations that are identified can be interpreted as relatively strong or stable contacts (Wasserman and Faust, 1994, p. 57;

Brewer, 2000). The networks of members who have harvested are the largest ones; those of non-members who have not harvested are the smallest ones.

The diversity of the categories of persons/organisations within a social network plays an important part in the decision-making process. Different people introduce different ideas, and the more varied those other people are, the more novel the information that the owner bases his decision on (Granovetter, 1973; Burt, 1992). Eventually, this is associated with a more active forest management (Sagor and Becker, 2014). Following these theories and observations, the more diverse social networks of the members of forest owners groups suggested exposure to more diverse forestry-related information, and may lead ultimately to higher harvesting activity.

The category that members have most harvesting-related contact with is the staff of the forest owner group. A comparison of the contacts of members versus non-members suggest that this contact with staff seems to replace to a great extent contacts to family/friends or forestry professionals when compared to non-members. Participants stated that they trust forestry professionals less when they commercially benefit by their advice (e.g. they advise to thin and get a percentage of the financial returns). The mistrust of expert advice is also supported by Hujala and Tikkanen (2008).

In understanding forest owners' harvesting behaviour, this exploratory study is by no means conclusive, but it does provide some insights into how forest owner groups might influence the harvesting activity of forest owners. As the results indicate, the staff of the group is a key source of information for the forest owners. It is also a trusted source.

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Parallel session 3: Forest owners and policy making processes

## European forest policy and forestry

### *Capacity-building for policy entrepreneurship in Europe*

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**Keywords:** *European forest policy, forestry, forest administration, organizational learning*

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#### **Introduction**

There are no provisions for a common forest policy in the European Union. Yet forest policy in the member states has become European. Although forest policy is subject to the subsidiarity principle, many initiatives, programs and regulations for rural development, biodiversity conservation, timber and renewable energy supply, or climate change mitigation and adaptation have origins in European arenas. They may be forest-focused or – more often – forest-related. The rise of a fragmented forest policy field in Europe went hand in hand with calls for better coordination and coherence (Pülzl et al., 2013; Winkel and Sotirov, 2016). Initiatives to broaden the knowledge basis for forest inventories and monitoring with harmonized data collection methods, the EU's forest strategies and action plans, suggestions to apply the Open Method of Coordination, a strengthening of integrated forest management at the landscape level, or implementation of sustainable forest management through the pan-European FOREST EUROPE process attest to the significance of Europe in forest policy (e.g., Birot et al., 2002; Edwards and Kleinschmit, 2013; Pülzl and Lazdinis, 2011; Sotirov et al., 2015).

A key question, however, is not well addressed, namely how to build a governance arrangement that works for those who are expected to implement the European policies. Follow-up to European policies might face substantial difficulties if political will and acceptance among forest owners and forest administrations in member states and at subnational level is lacking (Weber and Christophersen, 2002). Moreover, whereas forest ownership structures, management approaches and ecosystems are instrumental in the implementation of policies, it remains unclear what incentives would be necessary and sufficient to motivate the relevant actors to participate in European forest governance (Pülzl and Lazdinis, 2011). The present contribution sketches an applied research project that seeks to support the forest administration and forest owners in Bavaria to build-up capacities for policy entrepreneurship in Europe.

Policy entrepreneurship is about people who are able to push up their concerns higher on the agenda, anticipate windows of opportunity, and couple different policy streams (Kingdon, 2003). The present project draws on this perspective but seeks to embed these players in their organisations. It proposes a policy-oriented learning approach to foster entrepreneurship for forest-focused and forest-related policies in Europe from bottom-up. The focus on Bavaria allows for a most-likely case study since Bavaria's forest administration is a regular member of the EU's Standing Forest Committee. Moreover, forest owner representatives from Bavaria have leading positions in the private and state forest associations in Brussels.

#### **Material and Methods**

The methodological approach to advance capacity for policy entrepreneurship at subnational level is based on theories of organisational learning. So doing, the generation of policy-relevant knowledge about forest governance in Europe through social inquiry enables actors in Bavaria's forest policy field to better make sense of and anticipate developments in the fragmented arenas of Europe's forest policy, and transform lessons learnt into an advanced capacity for strategic choice. This process of policy-oriented organisational learning is obviously far from trivial and needs to be seen as a social accomplishment that links knowledge generation with action across

different stages (Böhling, 2007; 2014). The table below gives an overview of milestones, applied methods and outputs of the proposed methodology.

**Table 1.:** Project methodology and expected output

Milestones	Methods	Output
<b>1. Status-quo analysis</b> to assess willingness and perceived need to learn	Identification of key actors through snowballing, expert interviews, document studies, content analysis	Report, European forest policy map (draft status)
<b>2. Arrival at joint European forest policy map</b> with actors in Bavaria	Workshops (2) with group work and graphic recording to document results	European forest policy map (final version), subnational positioning, policy paper
<b>3. Scenario development</b> for participation in European forest governance	Survey (experiences with and perspectives on European forest policy among practitioners), workshop (1) with group work and graphic recording to document results	Report, policy paper
<b>4. Mediation</b> of project results	Presentations (various), project website	Networking
<b>5. Feedback</b> of project results and lesson drawing	Meetings (4) with representatives of forest administration and forest owner associations for joint lesson drawing	Networking, advanced capacity for strategic choice
6. Conclusion	Assembling of intermediate results into overall report	Final report and publications

The project duration covers three years (36 months). The status-quo analysis will be conducted in the first year; the workshops with actors of Bavaria's forest policy field and writing of the policy papers are the major activities of the second year; feedback meetings start in the second year; the project will be sealed in the third year. An inter-disciplinary project team, which includes a civil servant of the forest administration, is well suited to carry out the project. Currently, 1.5 fte/month plus additional capacity at the TUM Chair of Forest and Environmental Policy is suggested.

## Results

There are no results yet, but the following assumptions provide guidance to the project milestones:

1. European forest policy is not just about politics. It is also about puzzling, namely how to integrate 'external' concerns into forest policy (e.g., climate, renewable energy, cohesion, green economy).  
Yet, decision-making about an appropriate governance setting to foster integration of external concerns has a significant political dimension.  
Forest owners prefer integration through soft instruments (e.g., the EU forest strategy) and want to limit the impact of related policies in management decisions.
2. /
3. Learning how to build up capacities for entrepreneurship in European forest policy depends on the knowledge of this field among forest practitioners and administrators in Bavaria's regional forest offices. In general, one might postulate the following relationship:
  - The more knowledge there is among these actors, the more likely it is that learning to build up capacities resembles puzzling and thus problem-solving.
  - Conversely, the less knowledge there is among practitioners and administrators in the regional forest offices, the more likely it is that the learning becomes politicized. In that case, leading staff in the forest administration and forest owner associations might dominate the capacity-building in order to pursue their distinctive agendas.
4. Communication about project results is a means to network.
5. Joint lesson drawing with leading staff of the forest administration and forest owner associations requires sound preparing, tactfulness, informal talks, knowledge of formal

procedures, flexibility and commitment.

Forest practitioners at subnational level might be more knowledgeable about forest-focused and forest-related policies than expected by leading staff.

Joint science-policy-practitioner dialogues deliver results that create/increase awareness for forest-focused and forest-related policy-making in Europe and its relevance for decision-making in local settings.

6. Final report writing benefits from continuous reflection and scrutiny across project milestones.

## Discussion

Building capacity for entrepreneurship in European forest policy goes hand in hand with suggestions for a governance arrangement that works for administrators and practitioners at subnational level. Points of discussion are:

- What implications does capacity-building at subnational level have for the development of European forest policy?
- What does a strengthened capacity mean for the EU Commission *and* its DGs' behaviours? When, under which circumstances do we observe, either, ideology-driven, problem-solving, competence-maximizing behaviour, or a combination thereof?
- If learning how to build-up capacities for policy entrepreneurship becomes more like puzzling and less politicized, it may be more difficult to act ideology-driven in European arenas.
- If, however, learning how to build-up capacities for policy entrepreneurship is mainly politicized and less like puzzling, ideology-driven behaviour might be more likely in European arenas.

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# Stakeholder perceptions of Swiss forest policy

## *An analysis of the Swiss forestry sector*

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### Introduction

With depopulating rural areas, new objectives of forest owners, aging population and decreasing farming, forest ownership in Europe is undergoing fundamental changes (Whiteman et al., 2015). Simultaneously, forests in Europe are increasingly expected to provide several ecosystem services (Schröter et al., 2005). However, changing ownership and management patterns in Europe challenge this expected multi-functionality of forests.

In Switzerland, for example, the total forest area is 1.3 million ha or 12 786 km<sup>2</sup> (BAFU, 2015). Around 885 000 ha or 70% of the total forest area is under public ownership, 27% is privately owned, and 3% is owned by public-private partnerships (Landolt et al., 2015). Ownership characteristics vary greatly depending on the constituent-state (canton) of consideration, e.g. in the canton of Lucerne 70% of the total forest area is privately owned and in the canton of Valais 90% of the total forest area is under public ownership (Landolt et al., 2015). A key challenge in the ownership and management constellation is that there are around 240 000 actors owning small plots of forest (Landolt et al., 2015), which makes effective management to safeguard the forest functions difficult. Neither ownership patterns nor the share of public and private actors have changed much in the last decades, but management patterns are changing (Eschmann and Kohler, 2016). Additionally, several scholars have shown that there is a relationship between different management patterns and the ability to safeguard Swiss forestry (SHL, 2010; Spindler, 2008; Pudack, 2006; Hostettler, 2003). For instance and in relation to the challenge of small and fragmented ownership parcels, forest owners are increasingly joining forces in cooperatives, i.e. particularly private owners of small forest plots jointly manage their forests (Hansmann et al., 2016). Hence, the number of forest operators is decreasing, which is regarded as improving cost effectiveness (BAFU 2015). Moreover, there are initiatives by public actors, e.g. the constituent-state (cantonal) forest departments, to foster such cooperation and also to encourage forest owners to contract professional enterprises to conduct forestry tasks so that the multiple functions of the forests can be safeguarded (Eschmann and Kohler, 2016). Accordingly, it becomes relevant to assess not only how the current owners, but also other stakeholders (cantonal actors, national associations, forest enterprises), that is the addressees of a policy, perceive national forest policy. Because if the stakeholders do not perceive a policy as appropriate and effective, then the chances that they will shirk its implementation increase.

### Material and Methods

For the analysis, mainly qualitative data were collected, based on official documents, peer-reviewed papers, semi-structured expert interviews and an online survey.

In a first step, we analysed the current literature and national forest policy in Switzerland. We then supplemented this with expert interviews and an online survey, in order to understand how national stakeholders perceive the Confederation's policies. The limitation of this study is thus that it provides an aggregated view of stakeholders' perception, and no detailed insight onto individual private owners and into cantonal variations.

Expert interviews were conducted with eleven stakeholder group representatives. Experts were selected based on mutual agreement with the Federal Office of the Environment (FOEN). Expert interviews were undertaken with the following stakeholder groups: Institutions of the policy system (2x), forest management, which includes ownership (3x), timber industry (2x), environmental association (1x), other type of association (1x), science & education (2x) (Annex 1). The interviews took place between the 24<sup>th</sup> of March and the 2<sup>nd</sup> of April 2015 and lasted from ca. fifteen minutes to 1.5 hours. The data and quotes presented here have been translated into English and edited to ensure both readability and the anonymity of the interviewees. Quotes are numbered as T1–T11, with each number representing an interview partner.

The results of the expert interviews were validated and extended through an online survey conducted between the 29<sup>th</sup> of May and the 19<sup>th</sup> of June 2015. In total 83 representatives of the above 10 stakeholder groups were asked to take part in the survey (Annex 1). The response rate was 54%.

The empirical analysis focuses on the Swiss forestry sector, assessing a federal state in the center of Europe where particularly management rather than ownership is changing (cf. Landolt et al., 2015). To analyze the different instruments, we take not only forest owners but other stakeholders such as the timber industry, public administration and political decision-makers into account.

## Results

### The national forest policy in Switzerland

Before analyzing stakeholders' perceptions, we first need to understand Swiss forest policy. The central goal of Swiss forest policy is that forests should be managed in a sustainable manner (Landolt et al., 2015). The Federal Act on Forest, which applies to all forest owner types – public and private - defines various instruments that help to achieve this target. Moreover, in 2011, the Swiss Confederation developed a new “Forest Policy 2020”. This policy provides the strategic guidelines for the forestry sector. It formulates provisions for the optimal coordination of the ecological, economic and social demands on the Swiss forest (BAFU, 2013). The policy aims to ensure sustainable forest management and to create favorable conditions for efficient and innovative forestry and wood industry. In order to achieve this, the policy defines the following eleven objectives:

1. Maximizing the potential use of sustainably produced wood
2. Ensuring mitigation and adaptation to climate change
3. Securing protection forests
4. Securing and improving biodiversity
5. Maintaining the forest area
6. Improving the economic performance of the forestry sector
7. The forest soil, the drinking water and the vitality of trees are not endangered
8. The forest is protected from harmful organisms
9. Forest and wild animals are balanced
10. Recreation activities do not harm forests
11. Education, research and transfer of knowledge are given

The first five objectives are set as priorities by the Confederation (BAFU, 2013). Additionally, the Forest Policy 2020 formulates strategic guidelines and measures for each objective. The primary responsibility for implementing these measures lies with the federal authorities, however the role of the cantons and other actors (such as national associations of forest owners, managers, forestry experts) is also specified. Subsequently, this policy can be seen as the basis for the cantonal forest policies and hence also for forest owners and managers who are responsible for cultivating the forests.

### Perceptions of national forest stakeholders

Through the interviews we first aimed to know how the „Forest Policy 2020“ is generally perceived by the stakeholders. Accordingly, stakeholders were asked to write keywords and associations they related to the „Forest Policy 2020“. The positive and critical responses can be seen in Figure 1.

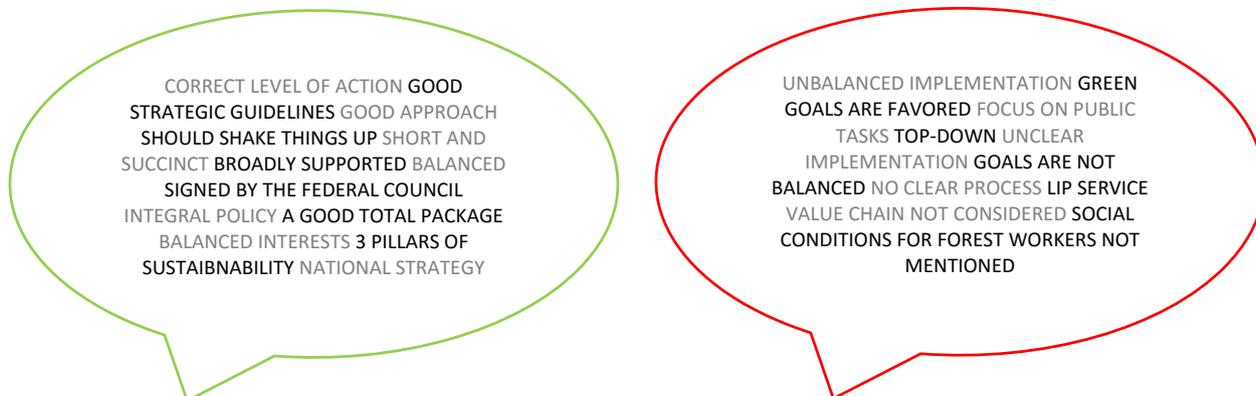


Figure 1.: Associations with the Swiss Forest Policy 2020 strategy (left positive, right critical)

As shown in Figure 1, more positive (13) than negative (11) aspects about the forest policy were mentioned. While some actors find the forest policy to be a “good strategic guideline” and a “balancing of interests,” others criticize it as being biased toward “green goals”, being “top down” and find its “implementation to be unclear.”

In a next step and in order to understand the stakeholder perceptions of the forest policy’s objectives, representatives of the stakeholder groups were asked to rank these. This was first done with the expert interviewees and then confirmed by the survey. The stakeholder representatives were specifically asked to rank the three objectives that they perceive to be most important, and the objectives that they find to be irrelevant. Figure 2 summarizes the ranking based on the results of the survey (40 of 45 respondents answered this question).

As can be seen in Figure 2, objective 6 of the Forest Policy 2020 – „improving the economic performance of the forestry and wood industry“ – was the objective most frequently chosen. The same was found in the expert interviews. This result is remarkable, because objective 6 is not one of the five objectives prioritized by for the Swiss Confederation.

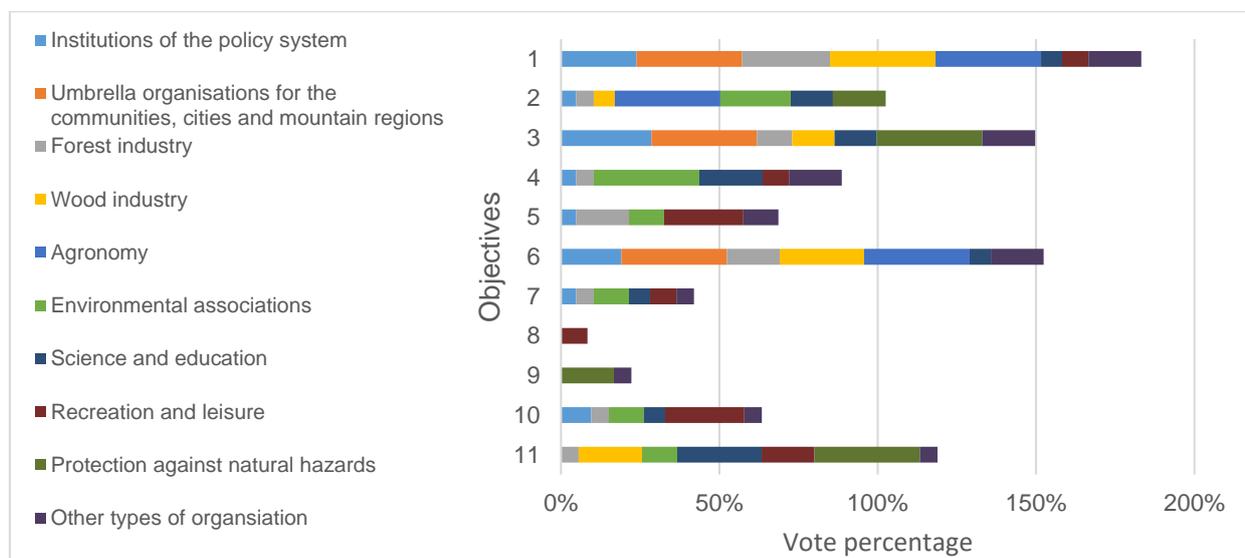


Figure 2.: The importance of objectives based on stakeholders ranking in survey

The stakeholders also directly criticized the participation in the development of the Forest Policy 2020's objectives, as they find that not all stakeholders were sufficiently involved (e.g. through participatory methods) in this process. Interviewees from the forest management as well as the research and education groups and 61% of the survey respondents stated that forest-related associations, forest owners, users and workers should be more involved in developing the forest policy in the future. In addition, interviewees from the forest management group and 24% of the survey respondents stated that particularly forest owners should be more involved in the development of future Swiss forest policy. In the survey it was also stated that the rights of forest owners should be improved.

Beyond perceptions of the objectives and participation, we also analyzed the stakeholders' view of the policy instruments. We asked stakeholders to name the instruments that they know and to what extent they find these fitting and effective for achieving the objectives of the forest policy or whether they see room for improvement. The instruments named include: financial incentives; Information; Planning tools; Research support; Prohibitions /Mandates; and Consulting and educational means.

Most interviewees stated that the current instruments are appropriate and effective and that there is no need for changes. They are considered to be classical tools with a high degree of effectiveness. However, an interviewee from the forest industry group mentioned that not all instruments are always applicable, as for instance financial incentives are only used in a limited manner. Generally, in relation to economic issues, interviewees said that it is difficult to „achieve much“. Particularly in relation to forest owners, interviewees noted a concern regarding financial aspects, as they stated that currently forest owners provide many services and fulfill diverse administrative stipulations without receiving financial compensation. A criticism was voiced by the interviewees that the Confederation holds the view that the forest owners are responsible for all economic aspects and that this is a too “drastic” position. These interviewees stated that the Confederation should also take responsibility for economic aspects, as these are public interests. Representatives from the group other type of association also stated that for instance in the domain of forest biodiversity, there are public interest objectives that stand in conflict with those of forest owners. For this reason, these actors argue that the Confederation should establish financial incentives so that the forest owners implement the public interest objectives.

## Discussion and Conclusion

The findings indicate that overall the national stakeholders positively perceive the Swiss Confederation's Forest Policy 2020, but that particularly in relation to economic aspects and participation concerns exist. Specifically regarding the prioritization of the objectives, there seems to be a misfit between the preferences of the stakeholders and the Confederation, as the national stakeholders prioritize the goal of “improving the economic performance of the forestry and wood industry“, which is not among the five prioritized goals by the Confederation. While this can be viewed as an indirect criticism of the forest policy, the stakeholders also criticized the forest policy directly in terms of participation and economic instruments. The stakeholders argued that that not all actors – and particularly the forest owners – were sufficiently involved in developing the Forest Policy 2020. The national stakeholders also criticized the applicability and use of financial incentives and generally voiced concerns regarding economic aspects.

In order to effectively steer forest owners and managers and thus safeguard the functions of forests, this analysis suggests that the Confederation should, on the one hand, integrate the national stakeholders and particularly the forest owners in the process of developing the Swiss forest policy (post 2020). Additionally and based on the stakeholders', and most notably those from the forest management group, perspective, the financial incentives and the Confederation's orientation regarding economic aspects should be reconsidered. Particularly the improvement of financial instruments might assist the Confederation and cantonal actors to foster increased cooperation among forest owners and managers, and in this manner offset the challenge of the small ownership plots and safeguard the functions of forests.

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## Annex 1 Stakeholders List\*

<b>Institutions of the policy system:</b>	<b>Akronym</b>
<b>1. Bundesamt für Umwelt BAFU</b>	<b>BAFU</b>
2. <i>Bundesamt für Landwirtschaft</i>	<i>BLW</i>
3. Bundesamt für Energie	BFE
4. <i>Bundesamt für Raumentwicklung</i>	<i>ARE</i>
5. Staatssekretariat für Wirtschaft SECO	SECO
6. <i>Bundesamt für Strassen</i>	<i>ASTRA</i>
7. <i>Bundesamt für Verkehr</i>	<i>BAV</i>
8. Eidgenössische Finanzverwaltung	EFV
9. Bau-, Planungs- und Umweltdirektorenkonferenz	BPUK
10. Jagddirektorenkonferenz	JDK
11. <i>Landwirtschaftsdirektorenkonferenz</i>	<i>LDK</i>
<b>12. Konferenz der Kantonsförster</b>	<b>KOK</b>
13. <i>Forstdirektorenkonferenz</i>	<i>FodK</i>
14. <i>Konferenz der Beauftragten für Natur- und Landschaftsschutz</i>	<i>KBNL</i>
15. Bundesversammlung – Das Schweizer Parlament	BV
16. <i>Kommissionen für Umwelt, Raumplanung und Energie</i>	<i>UREK</i>
<b>Umbrella organisations for the communities, cities and mountain regions</b>	
17. Schweizerischer Gemeindeverband	SGV
18. <i>Schweizerischer Städteverband</i>	<i>SSV</i>
19. Schweizerische Arbeitsgemeinschaft für die Berggebiete	SAB
<b>Forest industry:</b>	
<b>20. Waldwirtschaft Schweiz</b>	<b>WVS</b>
<b>21. Forstunternehmer Schweiz</b>	<b>FUS</b>
<b>22. Verband Schweizer Forstpersonal</b>	<b>VSF</b>
23. <i>Oberallmeindkorporation</i>	<i>OAK</i>
24. <i>Forstbetrieb der Burgergemeinde Lengnau</i>	<i>FBL</i>
25. Berner Waldbesitzer	BWB
26. Bernburger Forstbetriebe	BGBE
27. Staatsforstbetriebe Bern	SFB
28. <i>La Forestière</i>	<i>AFV-BV</i>
29. <i>Waldbesitzer-Verband des Kantons Schaffhausen</i>	<i>WVKS</i>
30. <i>Waldwirtschaftsverband beider Basel</i>	<i>WbB</i>
31. Forêt Valais – Walliser Wald	FV
32. <i>SELVA</i>	<i>SELVA</i>
33. Freiburgischer Verband für Waldwirtschaft	AFEF - FVW
34. Forestaviva Associazione forestale ticinese	AFT
<b>Wood industry:</b>	
<b>35. Lignum Holzwirtschaft Schweiz</b>	<b>Lignum</b>
36. <i>Holzenergie Schweiz</i>	<i>HES</i>
37. Task Force Wald+Holz+Energie	TF WHE
38. Holzbau Schweiz	HBS
<b>39. Holzindustrie Schweiz</b>	<b>HIS</b>
40. <i>Pavatex</i>	<i>Pavatex</i>
41. Forum Holz	FH
42. <i>Cedotec</i>	<i>Cedotec</i>
43. Empa	Empa
44. <i>Konferenz Kantonaler Volkswirtschaftsdirektoren</i>	<i>VDK</i>
45. Lehmann Holzwerk AG	Lehman
46. <i>Schilliger Holz AG</i>	<i>Schilliger</i>
47. Corbat Holding SA	Corbat
<b>Agronomy:</b>	
48. <i>Schweizerischer Bauernverband</i>	<i>SBV</i>

<b>Environmental associations:</b>	
<b>49. Pro Natura</b>	<b>PN</b>
50. Stiftung Landschaftsschutz Schweiz	SL-FP
51. WWF Schweiz	WWF
52. Schweizer Vogelschutz SVS/BirdLife Schweiz	SVS
53. Greenpeace Schweiz	Greenpeace
<b>Science and education:</b>	
<b>54. WSL</b>	<b>WSL</b>
55. ETH	ETH
56. HAFL	HAFL
57. Försterschule Maienfeld Bildungszentrum Wald	ibW
<b>58. Försterschule Lyss</b>	<b>BZW-LYSS</b>
59. Stiftung SILVIVA	SILVIVA
60. Forum Biodiversität	FB
61. Organisation der Arbeitswelt Wald	OdA Wald
62. Akademie der Naturwissenschaften Schweiz	SCNAT
63. Schweizer Ingenieur- und Architektenverein	SIA
<b>Water management:</b>	
64. Schweizerische Verein des Gas- und Wasserfaches	SVGW
65. Schweizerischer Wasserwirtschaftsverband	SWV
<b>Recreation and leisure:</b>	
66. Swiss Orienteering	SO
67. Jäger (Schweizerischen Jägerverband - SPW, Jagdschweiz)	SPW/JS
68. Verband Schweizer Wanderwege	CH Wanderwege
69. Netzwerk Schweizer Pärke	NetzwerkCHPärke
70. Schweizer Tourismus Verband	STV
71. Swiss Cycling	SC
72. Verband Schweizerischer Vereine für Pilzkunde	VSVP
73. Pfadibewegung Schweiz	PBS
<b>Protection against natural hazards:</b>	
74. SBB Natur und Naturrisiken	SBB
75. Fachstelle für Gebirgswaldpflege	GWP
76. Konferenz der Kantonsingenieure	KIK
77. Fachleute Naturgefahren Schweiz	FAN
78. Nationale Plattform für Naturgefahren	PLANAT
<b>Other types of organization:</b>	
<b>79. Schweizerischer Forstverein</b>	<b>SFV</b>
80. Schweizerischer Verband der Bürgergemeinden und Korporationen	SVBK
81. Schweizerische Vereinigung für Landesplanung	VLP-ASPAN
82. Arbeitsgemeinschaft für den Wald	AfW
83. Fachverband Schweizer Raumplaner	FSU
84. Forest Stewardship Council	FSC
85. Otto Läderach AG Worb	Läderach
86. Forstrevier Hardwald Umgebung	FRUU
87. Gemeinde St. Moritz	Gmde.St.M.

\* Contacted and Participating stakeholders: 1-83.  
 Italic = Stakeholders participating in the online survey  
 Bold= Stakeholders Interviewed

# Adaptation to climate change in forestry

## *Perspectives on forest ownership in policy implementation*

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### Introduction

In forestry, climate change has extensive consequences due to its significant effects on both human society and ecosystems. The changes in physical conditions of forest stresses the present need for adaptive actions in forest management and planning (e.g. Spittlehouse and Stewart, 2004). However, in forestry, adaptation has so far been placed less in focus than has mitigation, with the adaptation actions mainly being reactive rather than planned (Blennow, 2012; Lawrence and Marzano, 2013) and there is a large diversity in scope and level of national and supranational strategies (Keskitalo et al., 2011). Research on adaptation to climate change in forestry has also been relatively limited (see e.g. Kolström et al., 2011). This paper explores how the policy context influences perceptions of adaptation and the agency of various groups of forest owners. Forest management traditions, structure of forest ownership, the forestry sector and industry, and the naturalness of forestry are some of the factors that shape the policy context and the understanding of various adaptation strategies (e.g. Keskitalo et al., 2013). These contextual factors produce specific conditions and political challenges for implementation. Differences in social vulnerability (e.g. Adger, 2000) are reflected in differences in agency among different groups of forest owners, and in how the agency is shaped by the social, political and economic system (Smit and Wandel, 2006). In addition to present literature, it's relevant to consider the specific goals of different categories of forest owners in different countries and governance systems. Given that adaptation policy in forest management is still in a developing phase, the lack of policy and guidance could result in larger differentiations between different groups of forest owners.

### Material and Methods

In order to examine the role of forest ownership in climate change adaptations, we elucidate cases with a variety in forest ownership patterns and policy decentralization, including differences in legal system, in two countries: Sweden and Scotland. This comparative study explores the development and engagement in different adaptation strategies of different forest owners between one of Europe's most and less forested countries and with different structures of the forestry sector and forest ownership. Historically, Swedish forests and forestry became at an early stage an integrated part of the welfare state due to the combination of e.g. forest owning small farmers and various land reforms. The first forestry act contributed to the construction of the forest as a common interest. Landed estates and a high concentration of landownership have dominated the Scottish landscape. The unequal distribution of land, combined with the process of reforestation and the increasing economic dependence on forests, has shaped the political space of Scottish forests and formed its present structure (dominated landed estates and investors) (Wightman, 2011). Although about a third of the forest is owned by the state, the unequal ownership has contributed to a low public interest in forests and conflicting relations with farmers.

This comparative study adopts the two cases of political spaces of forests guided by economic and common interest (Sweden) and the cultural interest of the public and the economic interest

of a few (Scotland). By contrasting these two different contexts, this study analyses the various types of drivers of change and resistance that shape the climate change adaptation within forestry and how these different types of political spaces, structures of ownership and governing regimes pose different challenges and different possibilities for various groups to adapt. The implications for the landscape are also highlighted through the focus on the naturalization of forest within these processes. The analysis explores the impact of these contextual situations of forestry and forest ownership on different groups of forest owners' understanding and implementation of adaptation actions through a "focused comparison" of Sweden and Scotland in a "most similar system design" (MSSD). This design is well suited for contextual studies based on some inherently geographical and political similarities, to explore the specific features of the different countries.

## Results

In Sweden, the main development in adaptation has taken place through a commission (SweGov, 2007) and subsequent bill with broad recommendations. With regard to forestry, the Swedish Forest Agency (SFA) has been given the responsibility for adaptation, e.g. by reviewing the Forestry Act, monitoring and evaluating forest damage as well as test sites for tree species selection and management, and also developing an information campaign which targets small-scale forest owners (Keskitalo et al., 2011; SweGov, 2007). In Swedish forestry, the process and meaning of climate change adaptations in forest management is being challenged and negotiated within its present rationales (Keskitalo and Andersson, 2016) and through an emphasis on uncertainty (Lidskog and Lofmarck, 2015). Most of the adaptive measures, i.e. revised guidelines for cleaning, thinning and harvesting operations, are attention-driven by weather-related hazards, mainly storms, and underline the present coping approach to climate change and the lack of strategic and planned adaptation within Swedish forestry (Keskitalo and Andersson, 2016; Keskitalo et al., 2011). Within a governing system constituted by the epistemic authority of forest professionals to guide, support and transfer knowledge and norms to small-scale private forest owners on what is regarded as good forest management (Appelstrand, 2007), the combination of low awareness of climate change adaptation among forest owners (Blennow, 2012) and a inequality of knowledge between individual small-scale forest owners and the forestry organization (Keskitalo and Liljenfeldt, 2014) emphasise the position of the forestry organisations and the SFA in climate change adaptations. However, as the forest agency has suffered organisational downsizing and budget reductions since the 1990's (Appelstrand, 2007), this highlights the influential position of forest industry in climate change adaptations and the forest knowledge regime of Sweden.

In 2009, Scotland passed its own Climate Change Act and developed a Scottish Climate Change Adaptation Programme, which summarises the key risks and opportunities for the forestry sector. Actions are focused on promoting standards and decision support tools, as well as supporting research to enhance resilience. The Scottish Forestry Strategy refers to adaptation in only the broadest terms. One of seven key themes is 'Using forestry, and adapting forestry practices, to help reduce the impact of climate change and help Scotland adapt to its changing climate.' (Scottish Forestry Strategy, p. 9). Much of this theme relates to the way in which forestry can help Scotland to adapt, rather than the way in which forestry itself needs to adapt. Political goals for forestry adaptation are aspirational and are not strongly supported by incentives or information and advice. With a forest governance that is weighted towards incentives and voluntary regulation, the conditions and agency of various groups of forest owners to adapt to climate change very extensively. The large differentiation of forest ownership and the dominant position of landed estates and investors contribute to shapes the present meaning and implementation of climate change adaptation and the policy field. Furthermore the advisory system is highly differentiated by owner type, and commercial forestry advice does not tend to reach small or farm forest owners (Lawrence and Edwards, 2013). One strand of advice which has been promoted, but not accompanied by incentives, is to diversify commercial forests to reduce dependence on a very few, mainly exotic, conifer species. This message has had a mixed

reception amongst commercial foresters, who see little need to change species within the timeframe of a Sitka spruce rotation (30 years). Small scale owners are more motivated by landscape and flood protection concerns, or by biodiversity, and are less influenced by commercial species advice. In fact adaptation by all types of forest owners, where it is happening at all, is affected not by perceptions or experiences of climate change, but by both the reality, and regulatory impacts, of several catastrophic tree disease and pest outbreaks.

## Discussion

The variations in implementation and the importance and function of the forestry sector between different national and regional contexts can be seen to affect decision-making, measures taken and the inclusion of diverse perspectives in these processes. In the political context of climate change, new forms of agency are produced, which affects the fragmentation of, and shift in, authority and the multiplicity of actors. It's thus remains relevant to raise the question of: by whom and for whom is adaptation being defined (Smit et al., 2000) and what are the material effects of such representations. By highlighting forest ownership, and its diversity, in climate change adaptation, we emphasize the productive understanding of power that challenges zero-sum representations of the distribution of power (Okereke et al., 2009) and focus attention on the political imaginaries underpinning climate science and modelling (Lövbrand et al., 2009) and climate risk and adaptation governance (Oels, 2013) in forest planning and management. Within the present regime of neoliberalism, the process of implementing and mainstreaming climate change have shown to run the risk of repeating existing goals and rationalities (e.g. Methmann, 2010), and thereby limits the processes of being transformative in relation to the ecological, social and economic systems that is needed in effective climate change adaptations (Smit et al., 2000). With regards to forest ownership, this might, in combination with the unequal knowledge regime of forestry (Keskitalo and Liljenfeldt, 2014; Lawrence and Edwards, 2013) and the relatively low awareness (Blennow, 2012; Lawrence and Marzano, 2013), accentuate current power relations of forests and the distributions of climate-related risks.

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Parallel session 4: Common and community ownership – often neglected ownership types

# Across space and time: making sense of community forest ownership and management in Europe

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## Introduction

Community forests can be defined as a forest and a community linked by a set of rights and responsibilities: from this starting point we have explored the various dimensions of forest-community relationships that can be identified in Europe. As traditional forest commons are emerging with a new strength in some European areas and innovative institutional forms are developing in others, researchers and practitioners find value in sharing concepts and experiences and jointly analysing models of local environmental governance.

Global surveys of the phenomenon of community forestry reveal it to be largely an imposed agenda originating with development agencies or state policies (Lawrence and Ambrose-Oji, 2015); in contrast, existing initiatives in Europe seem more characterised by bottom-up modes, often developed through long-evolved practice (Jeanrenaud, 2001). Apart from this, there is a high space and time variability in the European cases, where each model appears to have different historical, legal, ownership and resource management development patterns. Considering that still most research efforts focuses on juridical or historical perspectives of commons and community forests (Grossi, 1977; De Moor, 2012), we aimed at exploring manifestations and meanings of European forest commons and community forests. Making sense of this wide richness of models was our prime objective, seen as a tool for learning from our diverse experiences. In addition, our research was driven by the need of identifying the meaningful dimensions of a typology of community forests and forest commons for Europe and highlighting the significant themes currently emerging in the European community forestry debate.

## Material and Methods

Our inductive research approach grounds on a reflexive, collaborative and iterative process taking place through personal meetings and constant communication in a period of two years. Since the beginning, our discussions made it clear that we needed to focus on ways to describe cases and models of community forest arrangements. In line with other studies which have looked at diverse relations between communities and forests (Genin et al, 2013; Lawrence and Ambrose-Oji, 2013), we developed an original joint framework of dimensions through which to analyse emergent similarities and variations.

Our empirical data consist of 17 case studies of very different geographical, historical and economic backgrounds in Italy, Slovenia, Sweden and the United Kingdom, chosen according to our common understanding of: i) certainty of being a community forest, ii) similarity and difference from the other countries and iii) uncertain cases. We thus deliberately chose case studies that both 'fit' and 'challenged' our ideas of what a community forest might be and compared our dimensions rigorously across the set of case studies. The cases were coded according to the sub-dimensions' attributes and a joint dataset was created.

## Results

Our research for dimensions enabling us to compare cases from very different contexts ended up with a list of 43 model dimensions organised in four categories: 1) Forest characteristics (6 sub-dimensions); 2) Community Forest Group (CFG) characteristics (15 sub-dimensions); 3) Relationship between the CFG and the forest (12 sub-dimensions); 4) Relationship between the CFG and the external world (10 sub-dimensions).

We found few consistent differences between what we thought were definitely community forests and those where we had doubts.

In terms of the **forest**, we found no single characteristics that distinguish those considered 'uncertain' from 'definite' CFG forests. The size of the CFG forest ranges from less than 10 hectares to more than 1 million hectares; even the smaller forests are important in the specific landscape context. Most are rural or semi-rural but in nearly one third of the CFG analysed, forest is located close to urban centres. Typically, forest cover and/or quality have increased, and productivity is medium.

In terms of the **CFG**, most are defined in terms of 'place', few on 'interest'. For both 'uncertain' and 'certain' there is a large range in size from less than 10 to more than 1000 members, and the same counts for the time of existence, which spans from less than 30 years to more than 300 years. When it comes to legal structure it seems as the existence of 'special status' appears to be an indicator of being a 'definite' CFG, as does the presence of formal regulations making it impossible to dissolve the CFG. In general, members have been found to have a strong sense of attachment with the CFG.

Focusing on the **relationship between the CFG and the forest**, various forms of tenure exist for both 'certain' and 'uncertain', but ownership (sometimes without alienation rights) is prevalent. The rights are typically attached to individuals or households, in a few cases to the CFG itself. All CFGs have withdrawal rights (timber, firewood and NTFP, sometimes in combination with money). Rights are held jointly either indivisible or as virtual shares. Productive objectives in forest management are medium or high while, perhaps surprisingly, livelihood objectives are medium or low. Decisions on forest management are usually guided by members or their elected delegates. Different forms of business model exist, but social enterprise is the most frequent.

In terms of the **relationship between the CFG and the external world**, we found that CFGs are not adequately represented in official statistics, i.e. recognized as a specific type of property regime. In all cases society has access to the forest and in 3 of the CFGs also (some) withdrawal rights. The production of public goods is highly relevant with emphasis on local and regional level. Only in one case the 'tragedy of the commons' problem is significant. In 6 out of 13 'certain' CFGs, but in none of the 'uncertain', there are externally-imposed additional constraints and obligations on the dividend. Public institutions have to a medium or high degree been involved in the formation of the majority of CFGs.

## Discussion

Our joint analysis leads us to propose six themes for making sense of the European community forest landscape.

**1. Clear but flexible definitions of forest commons and community forests:** our work on what is, and is not, included in our understanding of forest commons and community forests, leads us to a broad category with some firm criteria. There must be a forest in a particular place (i.e. a group simply interested in supporting forests does not meet the criteria); there must be a group with clear membership rules (although it will not always be possible to identify who all the members are); and there must be a defined relationship between the group and the forest (including some property rights) and between the group and the society, i.e. the group is recognised in its existence. This work prompted us to revisit the debate on definitions of community, noting some ambiguity in concepts of community of place and of interest.

**2. Significance of history, change and innovation in the European context:** Europe provides an invaluable contribution to the understanding of forest governance, and the diversity of options available. The great majority of analysis of community forestry around the world focuses on governance models developed as a result of intervention by government or international development; few others focus on indigenous forest management. In Europe we have models which have survived and adapted through 1000 years, others that have been imposed in the 19<sup>th</sup> century, and others that are the result of innovation in the last 20 years. Even in the most recent cases, however, a historical perspective on land rights and social justice plays a role. To appreciate the range of models we need to understand the wider socialpolitical contexts in which they appeared and have survived, disappeared or adapted.

**3. Going beyond 'ownership' to consider other 'bundles' of rights:** while most CFG own their forest, this is not always the case and ownership is often not the most important part of CFG's bundle of rights.

**4. The role of technical knowledge in community forest management:** although forest commons represent property rights, responsibilities for forest sustainable management are usually framed in wider governance frameworks. Production is often not the main goal of all the forests, but most are involved in conventional forest management. The technical aspects of forest management are recently often undertaken by contracted or hired professionals. We found little evidence that membership of a CFG or co-ownership of a forest is associated with particular forest expertise, or even with a concern to learn about it. However, members and co-owners do have particular local knowledge about their own resource.

**5. Multi-level governance, particularly the interface between community and the state:** community governance takes place in the context of other vertically and horizontally related layers of governance, including networks and associations with other CFGs, with NGOs, and relationships with state and municipal forest administrations.

**6. Visibility/legibility of community forests, often overlooked in national statistics:** many cases are not recorded in official statistics, or are recorded in ways that are ambiguous or inaccurate and this leads to cases where the existence of community rights has not been recognised. Visibility helps not only to avoid injustices, but also to strengthen the potential for these forms to offer models for sustainable resource management and human ecology.

## Conclusions

By focusing on diversity and using a qualitative, iterative and discursive method, we have developed a set of dimensions 'necessary' and 'sufficient' to describe our 17 cases, and possibly others. This enabled us to make sense of diversity and to understand that the relationship between the CGF and the forest is about much more than just ownership. The range of case studies includes some very specific models and sets of rights which would not necessarily be replicable elsewhere, but the processes whereby those models have been developed can provide valuable lessons to enrich the growing field of natural resource governance.

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# Land tenure changes of agrarian commons as result of political system changes in the transition country

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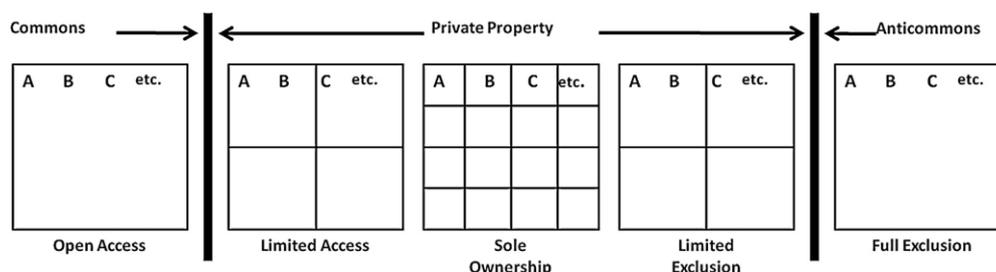
## Introduction

Land tenure (FAO 2002; Harvey 2006) presents an important part of social, political and economic structures. It is a subject of changes in time and space and as such present a broad variation of owning, possessing and disposal practises in different legal systems. From the practices concept of “a bundle of rights” has raised what enables comparison among different social, political and economic structures in time and space. History shows us that “*the only thing that is constant is change*” and land tenure rights are not immune to that. Historical milestones can be placed at the change of political system who often redefined land tenure relationship between *the titleholders with regard to something of value against all others* (Kissling-Näf and Bisang 2001). Among other countries, countries of Central and Eastern European (CEEC) were in the last century several times affected by the rapid political system changes which have completely changed a course of previous land tenure policy and thereby interfere in too the continuous development of tenure relations in the political more stable parts of the world.

Commons are robust antic institutions which are grateful research object as their land tenure regime is different from the others tenure categories. A subject of this study are changes in Slovenian agrarian commons tenure regime with its historical origin common to the others commons from CEEC (Premrl, Udovč et al. 2015). After restitution in the 90s' commons in Slovenia are using and exploiting natural resources, primary forests and are presenting one of the important forest land tenure categories. According to the resource we can classify them as pasture, agriculture and forest commons (Premrl, Udovč et al. 2015) even though their conceptual origin is the same. Because of their importance and actual problems in the restitution process, we attempt to outline their emergence, evolution and transition according to the matrix proposed by Heller (Heller 1998; Heller 1999).

## Material and Methods

In order to analyse changes in the commons land tenure regime, we are going to make a review of existing studies together with other sources overview and try to place milestones between the periods of institutional agreements important for the commons in Slovenia. Questioning which variable to follow through a time brings us to the property rights and from its bundle exclusivity and transferability. From here we are quickly on the field of theories of the commons (Hardin 1968; Ostrom 1990; Hardin 1998; Cox, Arnold et al. 2010) and anticcommons (Heller 1998). With the regard to the above-mention theories we are going to use Heller's' model (Fig. 1) (Heller 1999) used before for a diachronic analysis of the institutionalization of common land property in Portugal v (Lopes, dos Santos Bento et al. 2013).



**Figure 1.:** Boundaries of private property, matrix analytical study on the transition of ownership of commons' land (source: Heller, 1999).

## Result and discussion

Overview through the history brings us to the liberal revolutions of 1848 after that year land reform was done in the Austrian Empire. The reform ended the feudalism in all the Habsburg lands, including the territory of nowadays Slovenia. Together with others reforms, empire enters in the period of capitalism. The period for Slovenia ended after hundred years with the designation of 1<sup>st</sup> Yugoslavia. Second period of Slovenian history starts in 1945 after WWII and it is marked by a single party system. In the same year "*Law of agrarian reform and colonisation*" was adopted based on the Marxism principles. Nationalisation and redistribution of the land started. Third period is period of contemporary Slovenia and starts in 1991 with Slovenian independence from Yugoslavia. As the other CEECs, Slovenia also shifted its political orientation towards democracy and market economy. The consequence of agrarian reform of the first period was characterised with division of land among nobility, bourgeoisie and the peasantry. As a consequence, only less productive land, intended for grazing and household (fuel) wood supply, remained as undivided common land (Britovšek 1960). What happened in Slovenia happens also to other lowland (more productive) commons in other countries were which were largely dissolved in the eighteenth and nineteenth century (van Gils, Siegl et al. 2014). Even though the proportion of more productive land comes to hands of farmers, rural communities stays dependent on the common land used for grazing and to cover firewood needs. According to the matrix (Fig. 1) development went from the common to the common with the "limited access". Where users of the resources are coming from the residents of the communities linked to the common land. After WWII in the framework of socialist agrarian reform, the land in the agrarian commons was nationalised and came under the management of newly funded organisations, such as socialist cooperatives and government forest companies, or it was simply abandoned. Changes in the rural society happened in that period with the processes of deagrarianization, urbanization, depopulation and decline of the agrarian population (Klemenčič 2002) what have to be taken into the consideration when evaluating relations between users and resource. In that time larger areas of common lands were afforested or reforested. For the common land under forest companies management, we can say that it came also to the allocation of the using rights (ownership rights where revoke with nationalisation) and the common lands become state owned what means that the rights over the resource from privies common land were passed to the government, which gets all the rights to control access to the resource and regulates its use. This corresponds with a "sole ownership" from the matrix (Fig. 1). Coming in towards the present, the last period is characterised with Slovenia in transition towards market economy. Restitution of properties nationalised by socialist agrarian reform was one of the reforms done in Slovenia and others CEECs (Swinnen 1999; Giovarelli and Bledsoe 2001; Kissling-Näf and Bisang 2001; Karadjova 2004; Lawrence and Szabo 2005; Mantescu and Vasile 2009; Jepsen, Kuemmerle et al. 2015). For the general restitution, *Denationalization Act* was adopted in 1991, but soon after restitution started a need for *Lex specialis* for agrarian commons arose which was adopted in 1994. Based on that act, commons were re-established and the nationalised land was restituted. Property rights to re-establish agrarian commons were given to members of former commons or their heirs in to te co-ownership or common ownership regime. In general, in the commons of the first period property rights were not linked to the individual, but land tenure was in the hand of the common as an entity of users, its members. Not an important thing if the bundles of rights (given

to mainly new persons - generation shift) want holds a right of exclusivity and transferability recognised by *Law of Property Code*. This law and the land register does not recognise and distinguishes between a different kind of co-ownership and because of that do not recognise special governance regime of commons. That can lead us very far to the right in the matrix (Fig. 1) as there are known cases of commons where it comes to the underutilization of natural resources. Even though a *Lex specialis* for restitution of commons in Slovenia was adopted it didn't prevent situations of anticommmons which some of the commons are facing today. Because of that, a new *Lex specialis* was taken from the toolbox of policy instruments by the government in 2015 with the aim to limited individual members – co-owners rights and transfer their rights to the governing bodies of the commons.

Underutilisation of the resources it seems to be a more concerning factor in today commons (Lopes, dos Santos Bento et al. 2013) and not the classical problems of over tragedy over exploitation in commons (Hardin 1968). It looks that the commons as a land tenure regime is in practice and by theory (Kissling-Näf and Bisang 2001) not immune to behaviour changes detected by researchers among others land tenure regimes.

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Parallel session 5: Forest management innovations for new owner types

## Business models generation in forest sector: exploring innovation potential

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### Introduction

The past and ongoing social, economic and cultural changes result in alteration of forest ownership structures around Europe. The myriad impacts of globalization are driving companies to seek new forms of competitive advantage and/or new business opportunities. Innovation is consistently called upon as a mechanism for struggling forest sector companies to develop new business opportunity, competitive advantage, and improve firm performance (Hansen, 2010; Välimäki et al., 2004; Weiss et al., 2011). The innovativeness of the business model outputs can be described as fitting in two categories (Rametsteiner et al., 2005): product innovations and process innovations. The former is divided in product and service innovations, while the latter is divided in technological and organisational innovations.



**Figure 1.:** The Expanded Business Model Canvas and the four main areas of a business

Each business or economic activity employs a particular business model, either explicitly or implicitly, which represents the logic of the company to create, deliver and capture value (Osterwalder and Pigneur, 2010; Teece, 2010). It represents a company's strategic plan on how to take advantage of the opportunities and transform them into a business which would offer a company the desired competitive advantage. Business models can be designed and analysed with different tools, among which the Business Model Canvas framework (Osterwalder and

Pigneur, 2010) is one of the most widespread. A business model can be presented with nine building blocks. Kajanus et al. (2014) developed a business model design and evaluation tool, and introduced the expanded Business Model Canvas with three additional building blocks. Altogether, twelve building blocks coincide with the four main areas of a business (Figure 1) and represent the main analytical units of this study. The *customer & competition* area covers the people and organizations a company target at, the channels through which the customers are reached and value derived, and the type of relation with customers. *Organization's offering* encompass the assortment of products and services that create value for corresponding customers. The *infrastructure* is represented by key activities, resources and partners networks required by the organization to make the business model work. The *financial viability* embodies cost structures and revenue streams, where profit demonstrates the organization successfulness in delivering value.

The aim of this paper is to present a common comprehension of forest-related business models in selected European countries. The central question to be examined is threefold: a) did forest ownership changes in European countries yield innovative business models, b) what are the differences between business models, and c) what policy improvements should be made for motivating and encouraging business models.

## Methodology

The expanded Business Model Canvas in combination with Multiple Criteria Decision Support (MCDS) (Kajanus et al., 2014) has been employed to assess forest-related business models in selected European countries from the perspective of competitive advantage and business opportunity. The methodology comprises four consecutive phases: in the *first phase*, the scene and objectives are set, participant selected, evaluation criteria identified, and other materials prepared. The objective of the *second phase* is to deliver a set of items (i.e. elements of each building block of a business model) from a participatory setting (e.g. workshop, group brainstorming), following the Participatory Action Research (PAR) principles and actively involving participants and considering history, culture, local context and social relations (Ballard and Belsky, 2010). The *third phase* encompasses prioritization of the items. During this exercise, each participant evaluates the importance of each item against the selected evaluation criteria. An MCDS method is employed to calculate the core indexes to identify the number of effective portfolios each item belongs. The MCDS method represents an application of the Robust Portfolio Modelling (RPM) principles to prioritize relevant portfolio items in a setting characterised by multiple criteria, uncertainty and risks (Liesiö et al., 2007; Salo et al., 2006). In the *fourth phase*, an in-depth analysis of obtained results is performed together with the participants. A business model in this study represents a portfolio of relevant items covering all building blocks of the Business Model Canvas framework. The core item set represent the main strengths or attributes of evaluated business models. Finally, a comparative analysis and in-depth study of selected case studies has been conducted to deliver the answers to the research questions.

## Results

Analysed business models are presented in Table 1 along with the information about the country, implementation phase and short description of the business models. The results indicate that business models are delivering new service or organisational improvements, yet many of them are grounded in traditional forestry businesses. The implemented business models introduced new channels for reaching customers (Finland, eShop), satisfies new customer needs (Sweden, Permaculture), target new customers (Slovenia, wood auctions), reduce [transaction] costs (Czech Republic, SVOL), and improve customer relationships (Estonia, Commerce Associations and Latvia, Joint Stock Company). Similarly, the business models in ideational phase aim at facilitating learning and awareness raising (Finland, Virtual Forest), reducing costs (Serbia, SERBIO and Finland, Berry Map) and improving customer relationships (Serbia, PFOA). The most important business areas were infrastructure and offering. The core business model items encompass the building blocks: key resources (e.g. human resources, infrastructure), customer

relationships (e.g. uniqueness, personalization) and key activities (e.g. innovative services, reinforced cooperation). Besides, the technological maturity and customer willingness to accept and adapt to new technologies are essential elements of today's business models.

**Table 1.:** The analysed business models and relevant attributes

Identification	Country	Implemented?	Business model in a nutshell
SVOL association	Czech R.	Yes	Increasing information sharing and joint sale
Commercial Association	Estonia	Yes	Profit based on increase of biological assets
eShop of PFOA	Finland	Yes	Reaching new and distant forest owners
Virtual Forest	Finland	No	Awareness raising and information provision
Forest Berry Map	Finland	No	Informing and providing assistance
Joint Stock Company	Latvia	Yes	Supporting large forest owners
PFOAs	Serbia	No	Encourage networking and diminishing costs
Serbio	Serbia	No	Boosting biomass logistic and trade centres
Wood Auctions	Slovenia	Yes	Supporting the development of wood market
Permaculture	Sweden	Yes	Education and awareness raising

## Discussion

Changes in the forestry sector around Europe, together with rapid technological development, yielded innovations of service provision and organisational improvements. However, product and technological innovations are seldom present. A difference was observed in the highly developed countries (e.g. Sweden, Finland) and ex-eastern bloc countries (e.g. Estonia, Latvia) in that the latter are mainly concentrated on organisational innovations, while the former are focusing on service innovation. Establishing an appropriate operational environment might reduce or eliminate the barriers from the past and encourage the evolution of innovative products and technologies. On the other hand, customers varied needs are calling for further improvements of services and introduction of new technological innovations and products. In conclusion, the policy improvements and encouragements should be based on critical analysis of the historical events and current trends. We ascertain that future business models should emphasise further service provision and target broader range of beneficiaries from other sectors in order to gain competitive advantage.

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## Climate protection in small private forests in Germany – for owners and society (KKEG)

### *Workshop report: A nationwide survey of willingness to act of private forest owners*

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**Keywords:** owners of small private forest, climate change mitigation and adaptation, biodiversity protection, management objectives, society

### Introduction

The structural change in agriculture, amongst other things, has led to changes in lifestyle of the German forest owners that affect motivations and attitudes towards the forest (Härdter, 2004). At the same time, society has developed increased and diverse demands on the German forests: Traditionally she wants to use timber, but recently also climate protection and nature conservation is a focus. To prevent conflicts and to satisfy the different demands, policy is challenged to set appropriate frame conditions (BMEL, 2011).

The number of private forest owners is projected at 1,3 owners (Schraml and Härdter, 2002) up to 2 Mio. owners (Mrosek et al., 2005). To fulfil the societal demands, the small private forest has a great importance: Nearly half of the forest area of Germany is private-owned and half of this area again is smaller than 20 hectares (fig. 1).

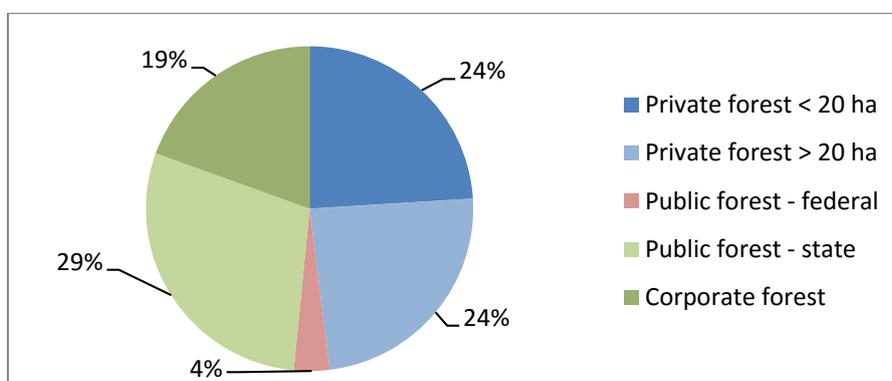


Figure 1.: Categories of types of property in German forests; National Forest Inventory (BWI) 2012

Until now, information about private forest owners in Germany is missing, especially towards objectives of the owners. Also, there is no explanatory approach for the willingness to act or for social milieus of forest owners in Germany.

There are already a number of regional and local studies in Germany about forest owners and their attitudes towards their forest holdings and various ecosystem services. But there is no recent systematic national research study about their forest management goals and about how they can be effectually addressed. The only representative survey of forest owners in Germany was conducted in the year 1999 (Schraml and Härdter, 2002) and therefore does not provide up-to-date data. However, this knowledge is essential for the development of new offers to improve timber production, climate mitigation, climate adaptation and nature conservation in small private forests.

This research aims at examining the willingness to act of private forest owners in order to give an explanatory approach with the model for human decisions to act. Based on this, the goal is to identify offers that support forest management objectives and practices that are of interest for both, small private forest owners (representing about one-fourth of the forest area) and non-forest owners (society).

A side effect of the study is to gain estimation on how many forest owners there are. Unlike as in other European countries, the exact amount of forest owners in Germany is unknown and the contact data are not registered at any place. So the only way to identify forest owners and gain information about them is a survey in which a representative amount of households is reached.

Another interesting goal is the classification of forest owners in existing *social milieus*.

## Material and Methods

The center of the methodical approach will be a nationwide representative survey to interview private owners of small forests and society in 2017. The survey will be carried out in two steps: In step one, the owners will be identified. In step two, they will be interviewed about their circumstances and willingness to act in terms of forest management. Also, the demands of society relating to forests and their attitudes towards forest management objectives will be requested in the survey. The willingness to act of the forest owners will be compared with these of society to ensure a win-win situation in developing the new offers.

Additional, there will be a classification of forest owners and society into social milieus to examine how far these groups differ in their attitudes and values. Also, this gives the opportunity to get additional insights to attitudes and values of forest owners with the rest of society.

The data will be analyzed with multivariate methods like cluster-analysis and regression analysis (logit-model).

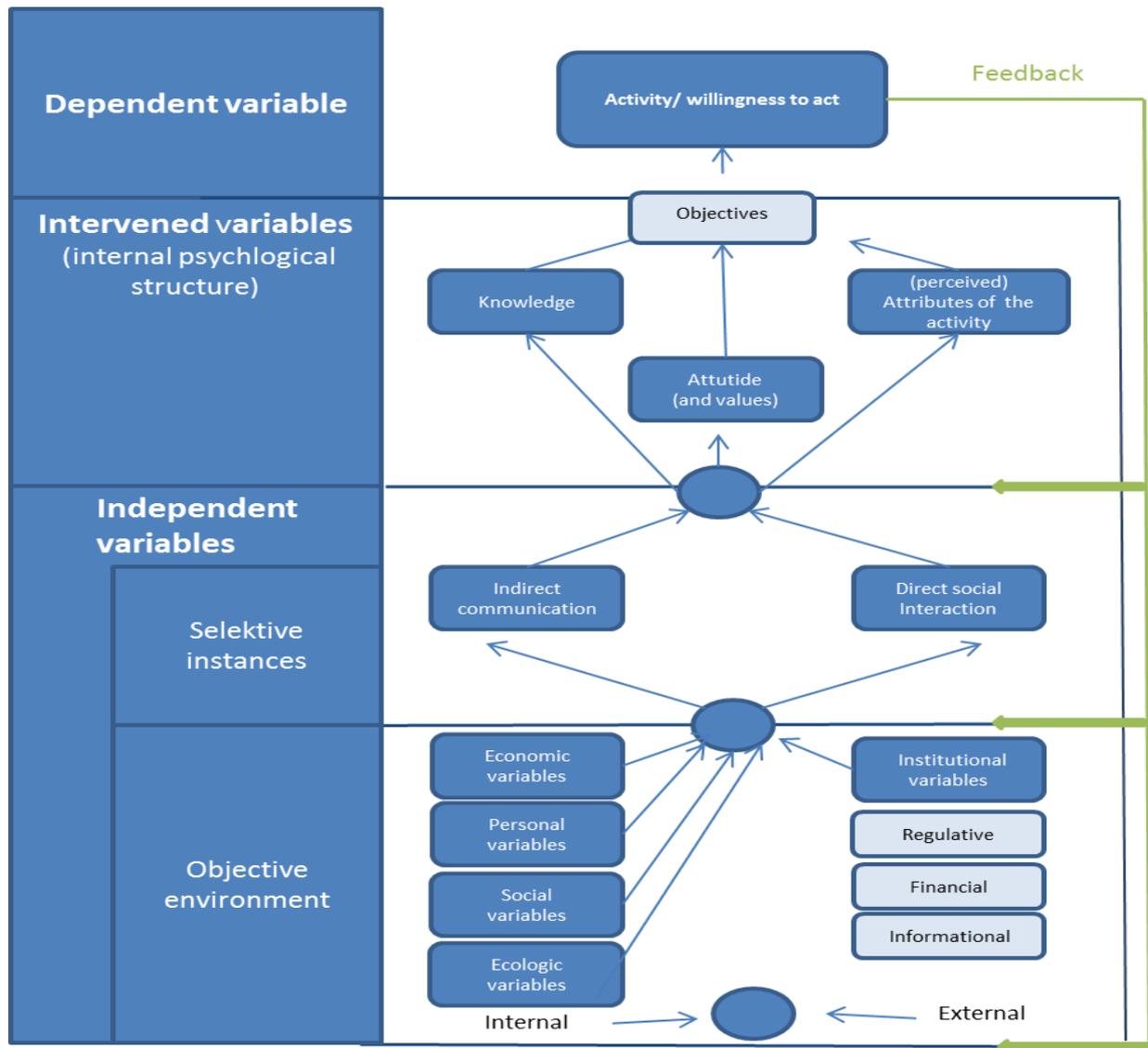
Currently the project is preparing the tender for the survey.

## Theoretical framework

The dependent variable which is to be observed is the activity and willingness to act of small forest owners regarding management practices that positively affect climate protection.

There is a wide variety of determinants influencing human decision behavior, often linked with each other in a complex way. To reproduce these correlations and processes, science often uses models as simplifying pictures of reality. For the planned survey of this project, the “Explanatory model for human decisions to act” (Pregernig, 1999) is modified and used. This model includes a set of variables based on personal information, communication and natural environment of the respondent (fig. 2). The model should not be seen as an exact reflection of reality because on closer inspection, many more influencing determinants would be found which are moreover linked in a complex way. So, the explanatory model for human decisions is not to be understood as a verified causal structure model, but as a heuristic to help structuring the research problem (Pregernig, 1999).

The model distinguishes three types of variables: Dependent, intervened and independent variables. This means, there is no direct link between independent and dependent variables because it is supposed that the objective environment determines the behavior only to that degree, as it has entered the internal psychological structure, which therefore is effective as intervened variable.



**Figure 2.:** Explanatory model for human decisions to act (by Pregernig 1999 and Langenheder 1975; modified)

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# Woodland resilience and management on private sporting estates in the Highlands of Scotland

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**Keywords:** *estate ownership, woodland, resilience, management, Scotland*

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## Introduction

In the Highlands of Scotland 43% of the land is under private sporting estate ownership, as a group and individually private estate owner decisions and management actions have significant influence on the shape and subsequent services produced by the regional landscape (Warren, 2009). A diverse pattern of ownership is emerging within the sporting estate paradigm, as interests of individual and agency estate owners are changing in order to adapt to changing climates, economic challenges and public interest (MacMillan, et al., 2010). Due to the dominance of sporting interests woodland management has declined in recent history, producing a culture of social neglect and reduced capacity (Dandy, 2016). Woodland resilience is normally viewed through the frames of tree health and climate change, focusing upon structure, diversity and species suitability, which has underplayed the importance of socio-economic resilience of woodland and the resultant relationship with socio-ecological impacts. This paper presents a new and regionally specific view on woodland resilience, based and formulated upon the individual and collective perspectives of estate owners. Additionally, these interpretations are spatially connected with estate areas and practice, which strengthens the utility of this method for development and planning insights over landscape scales.

## Materials and Methods

The concept of woodland resilience is constructed through a combination of field interview (spatially tracked), woodland planning and collaborative discussion data. However, new insights into spatial resilience have been generated through a novel approach, which enables landowners to interpret their estates through established resilience concepts on a spatial scale, informing perceptions and meaning to physical areas of the estate and associated practices. Several resilience terms including stability, adaptation, transformation and collaboration were applied (Folke, et al., 2010) to areas of their estate creating landscape resilience map that showed the owners interpretation of estate resilience that informs decision-making and practice.

The field interview involves the landowner guiding the researcher around the estate on foot and by 4x4 vehicle, these movements are spatially tracked by a GPS, which is time correlated with two Dictaphones, recording the conversation as the participants move through the landscape. Using such a method has been suggested to capture richer data and insights that would normally be overlooked in conventional, less mobile interviews (Jones & Evans, 2012). Alongside the interview landowners identify potential planting areas for woodland expansion that would beneficially integrate with the estates current practices, specifying species mix, stocking density and harvesting rates for woodfuel products.

## Results and discussion

Figure 1 shows the landowner perception of estate resilience with dominance of 'stable' areas being identified due to strong links with sporting use (e.g. feeding sites, wintering sites, grouse habitat and general open landscape). However, one notable addition to the suite of resilience terms is the brown area, which is mostly located around the boundaries of estates representing 'static' areas that are unchanging, inaccessible and not socio-economically beneficial to the

estate. 'Adaptive' areas in orange demonstrate future and current projects, which are changing the composition and subsequent practice of the land, whereas the 'transformative' areas in yellow represent land that is both vulnerable to change and is constant flux, and could be converted to multiple uses. The single 'collaborative' area, purple, is a joint transboundary project between the private estate and the neighbouring NGO estate, which have contrasting agendas.

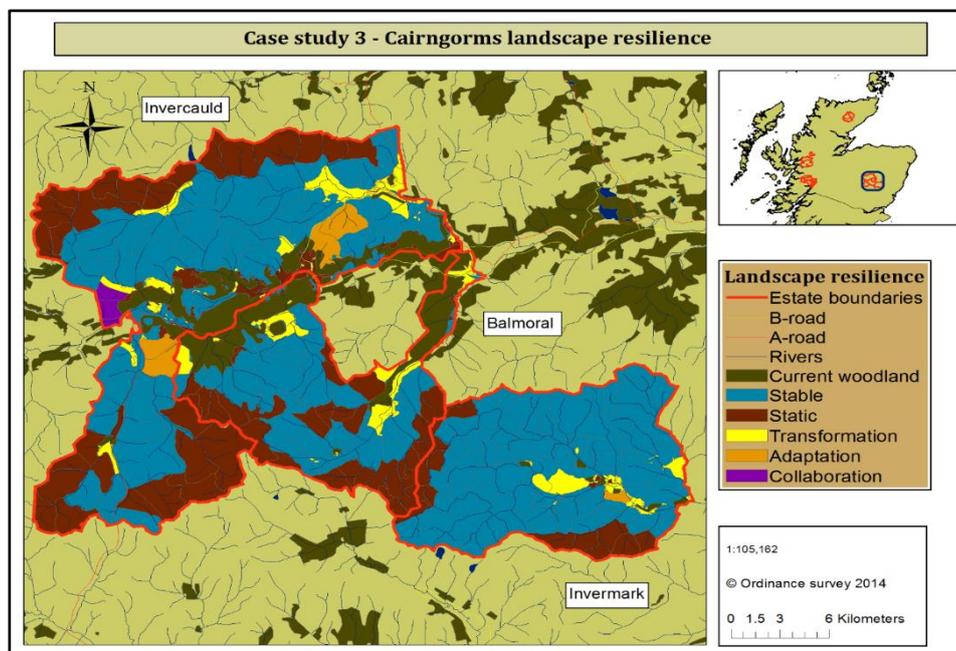
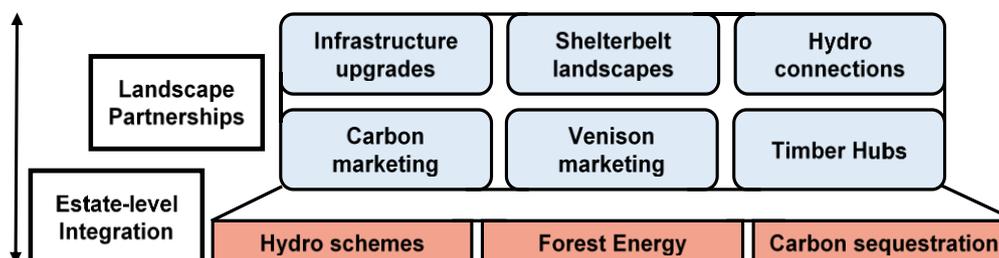


Figure 1.: Landowner perception of spatial resilience

Amenity woodland is considered stable, especially those that serve as shelterbelts or areas of Caledonian pine woods that fulfil the native woodland expansion mandate set by the Scottish government (WEAG, 2012). However, non-native plantations are considered to be static, which are unable to change due to negative equity, lack of incentive, knowledge and collaboration. Adaptive woodlands are identified as small areas of broadleaf planting, shelterbelt restructuring, riparian planting and natural regeneration. The single productive woodland identified as stable and beneficial is a commercial Christmas operation, which requires an actively managed and species diverse short rotation crop. Supporting the case for further increase in species diversity, stand structure and woodland product diversification. Many landowners express an aversion to planting more woodland or bolstering the resilience of current woodland through expansion of diversity and structure due to the range of threats from pests, disease and climate change uncertainty (Cavers & Cottrell, 2015), as well as unreliable markets. This has created an unpredictable and unstable forestry culture, which is undermining future resilience, diversity and strength of forestry in Scotland. Incompatible rationales between socio-economic and ecological resilience has created an impasse that requires innovative solutions and approaches to bridge the growing cultural gap between woodland culture and estate management.

Despite larger estates being described as more progressive and capable of diversification due to the scale of economy this studies shows that smaller and newer estates are more prone to diversify and integrate new uses with traditional sporting activities (Glass, et al., 2013). This stems from a combination of new ownership, ease of smaller estate management and several larger estates unable to maintain business or in-house management capacity. Resilience actions centre on developing estate and regional capacity in parallel, which primarily focuses upon carbon sequestration as a management tool to add value and wider significance to woodland management. Increasing species diversity, structure and multiple rotation stands are identified as important development areas by landowners with the support of more flexible and regionally

specific grant schemes, in addition to adopting a single tree silvicultural approach. These actions aim to strengthen woodland resilience are dependent upon expanding expertise, knowledge and skills base in the region (Walker & Salt, 2012).



**Figure 2.:** Partnerships supporting woodland resilience in a wider landscape (landowner perception)

Figure 2 presents a partnership framework constructed by landowners that would simultaneously, in their opinion, strengthen woodland resilience and culture, as well as landscape scale management. A notable element of the framework's composition is the strong link between activities that support traditional sporting use and emerging markets that focus on energy and activities that support climate change strategies and targets. Emphasising landowners' willingness to diversify, feeding into wider landscape considerations without compromising traditional management and personal values.

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# Family forest owners' opinion on potential forest leasing service in Finland

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**Keywords:** family forests, outsourcing, survey, service characteristics, value offering

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## Introduction

A continuous supply of raw material for the expanding forest-based bioeconomy demands active and novel forest management. When the forest resources in Finland are largely managed by a huge number of individual family forest owners, a potential systemic innovation is to adopt practices from large-scale forest management and tailor them to the needs of small-scale forestry to acquire scale benefits. A solution being currently investigated in Finland is an all-inclusive forest leasing service to forest owners, which enables outsourcing the administration of forestry as well as all operational wood sales and forest management decisions. Alongside offering added-value e.g. to non-resident owners in the form of easiness, the service can improve the efficiency of forest management and wood mobilization.

There already exist some services for outsourced forest management. For example, selling standing timber and connecting regeneration service to timber sales has been possible for a while. In addition, forest owners may make longer-term agreements with timber buying companies or forest management associations so that the contracting organization is the main service provider and timber buying partner to the owner. However, in the existing models, forest owners still need to make operative management decisions one by one, they are carrying the major part of the risks related to e.g. timber price fluctuations, and the income flows from the forest can be unstable as they are based on annual activities in the forest. The new forest property management model based on forest leasing could include value offerings related to these elements.

The objective of this study is to find out the reactive attitudes of family forest owners related to the new service. In addition, the study seeks to define the feasible characteristics of the service from the viewpoint of forest owners.

## Material and Methods

The research material for the study was collected with a questionnaire to forest owners. The questions related to e.g. owners' willingness to take part to the new service, owners' wishes towards the potential characteristics of the service (e.g. information provision, control mechanisms and payment schedules) as well as the owners' perception of the compensation that s/he would be willing to give to property management service provided.

The forest owner sample was based on the forest information system of Finnish Forest Centre. The target forest holdings were located in the areas of North Karelia and Päijät Häme, eastern and southern Finland, and their forestry land area needed to be larger than 10 ha. The original sample size was 2 600 holdings (half from both areas). Due to ownership changes and unknown contact information, the final sample size was 2 575 holdings.

The data was collected from forest owners in winter 2016 (Jan-March) using a traditional postal survey. It was, however, possible to answer to the survey through internet by using a link that was attached in the questionnaire materials. Altogether 663 forest owners responded to the questionnaire, which results in 25.7% response rate.

The respondents and non-respondents did not differ much with respect to their background characteristics. However, participation of owners who were living in the same municipality and the same region with their holding was lower, which indicates poorer response rate from farmers. In addition, representatives of heirs responded less frequently than individual and family owners. In comparison to results of general Finnish private forest ownership survey (Hänninen et al., 2011), the background characteristics of the owners who participated to the survey correspond rather well the general ownership characteristics of owners in North Karelia and Päijät-Häme, although the owners with larger forest holdings responded a bit more eagerly.

## Results

The results indicate that forest owners' hypothetical willingness to adopt the new forest property management service is rather low. About 5 percent of forest owners indicated that they would be willing to give their forests under lease (totally or part of the area). Although the percentage is low, this share of all owners would mean in regional level that the number of available holdings would be 1250 for both regions and about 15 000 in whole country level.

More than 10 percent of the respondents were hesitating: evidently they would need more information (than only a short description in the questionnaire material) on this new service for indicating their opinion. However, large majority (79%) of owners were unwilling to lease their forests. In addition, 5 percent of owners could not express their opinion to this question.

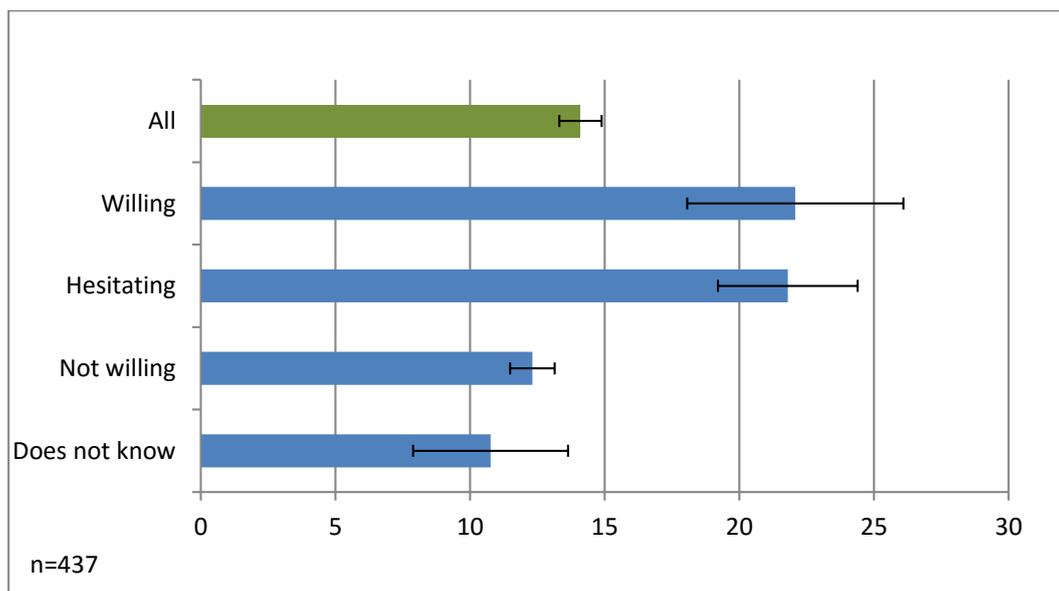
Regarding the statistically significant differences with respect to background characteristics of owners, those owners who had higher education (polytechnic, university) and whose forest holdings were located in North Karelia, were more willing to lease their forests. Other background characteristics affecting positively to the decision to lease were young age (<40 years) and owners who were living in other municipality than where their forest holding was located. In addition, earlier experiences related to renting of property (apartment, summer cottage, vehicle) as well as owners who already had some kinds of agreements with timber buying companies or forest management associations affected positively. Also forest owners who had not made timber sales or who had not been self-active in silviculture were more interested of the new all-inclusive property management service.

The most prioritized characteristics of the new service were also examined with a set of questions where the respondents needed to weight the given alternatives related to payment schedules, regeneration, and the tenant's freedom to harvest the forests. The results indicate that forest owners prefer even annual payments from the tenant. In addition, they want to avoid risks in regeneration as they would prefer that the tenant guarantees a successful regeneration of the stand. Among the least preferred service model alternatives were those where the regeneration was done according to minimum statutory requirements and in which a large share of the rent for the whole leasing period would be paid right after the agreement is made.

Defining the basic principle and the level of the rent is an essential part of the service development, competitiveness and its acceptability. Two main principles have been considered: payment based on the return of capital (the holding's monetary value) and a cash-flow based payment. In this questionnaire, the cash flow principle was adopted and the owners were asked as follows: *"Let us assume that you own forest from which the annual net income (timber selling income minus silvicultural and administrative costs) under your own management would be 100 €/ha. With a further assumption that you give the administration and management of your forest to external trusted service provider for the forthcoming 10-year period. The service provider is with her/his professional expertise able to increase the annual net incomes from your forest to 110 €/ha. – How much would you be willing to pay for the service provider from the 110 €/ha annual net income?"*

The responses show a large variation in the willingness to pay to service provider (Fig.1). On the average, willingness to pay from the service and improved profitability was 14 € ( $\pm 0,80$  €), which is about 13 percent of the net incomes. Interestingly, those who would be willing and who were

hesitating to lease their forest would pay clearly larger amount to the service provider than those who were not willing to lease.



**Figure 1.:** Forest owners' willingness to pay from the forest property management service under an assumption that the annual net income from their forest would be 110 €/ha.

## Discussion

The results of the study indicate that although the proposed property management service is interesting to a relatively small group of forest owners, it may reach and serve the main target group that is looking for easiness and even annual income. Owners outside timber markets and those who are not living next to their forest holdings were the most interested to adopt the new service. However, this kind of service is still non-existing and two parties are needed to start this kind of business. From the forest owners' side, the service needs to be clearly defined. In addition, it is evident that the owners need to trust the tenant and the subordinating actor network that will be needed to run the service in practice. There seems to be a lot of negative assumptions towards the service already know.

Thus, forest entrepreneurs are now in a key position to design and adopt the service into their business portfolio in an appealing way. There are some weak but encouraging signals that forest companies see forest leasing as an interesting business opportunity in Finland.

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Parallel session 6: Governance of changing forest ownership

# Actors and interests related to the restitution in the forestry sectors in transition

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**Keywords:** actor-centered power, transition process, institutional reforms, privatization, system change

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## Introduction

Since 1990s, the post-socialist countries in central-east and south-east Europe are facing challenging transition process. These, formerly communistic one party regime countries shifted to the democratic pluralistic system. This process of political and economic reforms has significantly influenced forestry institutional reforms in all these countries. Restitution process was initiated almost in all countries with the aim of recognizing private property rights, and it was one of the major changes with which forestry sector faced. This process was followed by many changes of forest policies and regulations, and was influenced by many different forces and interests from inside, as well as from outside the countries, mainly through the harmonization processes with international rules and regulations.

In the Czech Republic, Serbia and Slovakia, a process of restitution of forestland to their original owners took place, upon the entry into force of the laws to that effect. Empirical studies dealing with the restitution of forestlands have mainly a descriptive role of the process in various countries (Sarvasova and Tutka, 2005; Ioras and Abrudan, 2006).

This paper gives comprehensive overview of the restitution process, which significantly changed the ownership structure in CEE and SEE Europe. The aim of paper is to conduct comparative analysis of the restitution process in selected post-communist countries from the region: Czech Republic, Serbia, and Slovakia, with the aim to analyze related institutional change and identify barriers that occurred during the restitution process and their consequences on overall forestry policy goals. Under barriers, we assume uneven influence and power of actors involved in the process (e.g. influence of the state forest enterprises or bureaucracies with their power of expertise on the process, the role of forest owners in the process etc.).

First we analyzed the restitution process in selected CEE and SEE countries. Then we used the work of Krott et al. (2014) to explain the power relations of forestry actors in the restitution process in selected Central and Eastern European countries using the actor centered power theory. We only addressed restitution of forest land that belonged to private forest owners. Three core elements of the ACP are coercion, dis/incentives and information. Coercion is defined as altering actors' behaviour by force. The proposed model looks mainly at whose force prevails, and describes the amount of dominance as power. No restriction on one actor is given, it can also comprise network of actors (Krott et al. 2014, p. 5). Dis/incentives are altering the behavior of the actor by means of disadvantages or advantages without recognizing his will. The actor-centred power theory assumes that, within a power-free environment, all actors would have free access to all sources. Limiting the sources of specific actors is a power process and without such limitation the value decision of the actor would be different. Therefore decisions are not only value-driven but power-driven as well (Krott et al. 2014, p. 5-6). Dominant information when becoming a power process aims at "altering the behavior of the subordinate by means of

unverified information”. If the subordinate does not verify the information received from the potentate and makes a decision based on this information the potentate will have altered the subordinate's behavior without recognizing his will (Krott et al. 2014, p. 6).

Following research questions were addressed:

1. Who are the main interest organizations and actors involved in the restitution in forestry sector?
2. Which interests do they hold? Are they in line with overall forest policy goals?
3. How do these organizations differ in their power for securing their interests?

### Material and Methods

Three countries were selected for the comparison: Czech Republic, Slovak Republic and Serbia. The methodological approach combines multiple research methods. Document analysis was used in order to identify main interest organizations and actors involved in the restitution process. The main data sources for the qualitative part were expert structural interviews following an interview guideline developed by the authors. The main aim of the questionnaire was to identify interests of the main actors and then to assess their power in the restitution process. The power of actors involved in the restitution process in the two phases of the policy cycle is assessed. The power is assessed according to ACP factors – coercion, incentives and information. A scale of four values was used, ranging from three to zero, meaning: 3 for high-powerful, 2 for mid-powerful, 1 for low-powerful and 0 for non-powerful. The power of actors was assessed in the direction of the arrow in the table. The power of one actor corresponds with the power of the other actor, therefore the power relations between two actors are marked with the same color. If one actor has power 3 the other has automatically 0. The values were than averaged (white square) and added up for each actor (red square) giving the number of the actors’ power potential according to the table 1. Each country provided information according to this matrix.

**Table 1.: Matrix for the power potential evaluation**

Actors	“New” forest owners and their interest groups	Institution responsible for restitution process (state forest enterprises)	State forest administration	Politicians
“New” forest owners and their interest groups <span style="border: 1px solid black; padding: 2px;">0,0</span>	X →	C	C	C
		M <span style="border: 1px solid black; padding: 2px;">0,00</span>	M <span style="border: 1px solid black; padding: 2px;">0,00</span>	M <span style="border: 1px solid black; padding: 2px;">0,00</span>
		I	I	I
Institution responsible for restitution process (state forest enterprises) <span style="border: 1px solid black; padding: 2px;">0,0</span>	C	X	C	C
	M <span style="border: 1px solid black; padding: 2px;">0,00</span>		M <span style="border: 1px solid black; padding: 2px;">0,00</span>	M <span style="border: 1px solid black; padding: 2px;">0,00</span>
	I		I	I
State forest administration <span style="border: 1px solid black; padding: 2px;">0,0</span>	C	C	X	C
	M <span style="border: 1px solid black; padding: 2px;">0,00</span>	M <span style="border: 1px solid black; padding: 2px;">0,00</span>		M <span style="border: 1px solid black; padding: 2px;">0,00</span>
	I	I		I
Politicians <span style="border: 1px solid black; padding: 2px;">0,0</span>	C	C	C	X
	M <span style="border: 1px solid black; padding: 2px;">0,00</span>	M <span style="border: 1px solid black; padding: 2px;">0,00</span>	M <span style="border: 1px solid black; padding: 2px;">0,00</span>	
	I	I	I	

### Results

In the Czech Republic and Slovakia the restitution of forest land started in 1991. In Serbia, the restitution process started only in 2006. The process has been time-consuming, and countries often report that the intended deadline had to be postponed, since the unsolved restitution issues were not resolved in the given time, sometimes due to environmental constrains, sometimes due

to slow institutional procedure. In addition, the rights for restitution were limited only to those persons who were the country's citizens.

**Table 2.:** Restitution process in selected countries according to ACP in the implementation phase – assessment of the power potential of different actors

Stakeholders	Czech Republic	Slovakia	Serbia
"New" forest owners and their interest groups	4.32	4,33	6,32
Institution responsible for restitution process	6.65	7,33	3,33
State forest administration	8.32	5,33	3,00
Politicians	7.31	2,33	2,66*
			1,33
State forest enterprise**			7,00

\*Serbia provided assessment separately for right and left wing politicians

\*\*Serbia listed State Forest Enterprise as a separate actor

Table 1 presents results from the assessment of the actors' power in the three countries. One of the results of restitution has been the creation of a large number of small forest owners, who often lack the knowledge, skills and resources needed for sustainable forest management. Their power was not so strong compared to other actors as in all countries there were no financial incentives to help them in the restitution process and they were burdened by administrative problems and high costs. The liable entities responsible for the implementation practically controlled the entire process with sufficient staff, information and financial security. They financed most of the costs from their own resources. Help from the state budget was minimal. State forest administration was powerful in the Czech Republic as they administered the funding for the new owners. Politicians in Slovakia and Serbia lost their power in the implementation process as the main competences were given to the liable entity. In Czech Republic the politicians were powerful as they developed the whole legislation and had a decisive influence on the financial support when creating the state budget and support funds. It can be concluded that the entire restitution process was conducted in a relatively broad consensus of political representation, government and liable entities.

## Discussion

The restitution process created a new situation for former forest owners and their heirs, whose property rights had been interrupted during the socialist regime and who therefore had no knowledge of forestry. New owners with no experience of administering and managing private property joined together to form associations that could advocate for their interests in the formation of suitable economic, social, organizational and legislative conditions. For these "new" forest owners, interest or stakeholder organizations are a way of protecting and representing their common interests in the policy-making process (Weiss et al., 2011).

Often, the main critique regarding the governance of the restitution process was that it has been done without setting a proper institutional framework. Each country mentions the difficulties in the property claims. In every country, the claim for restituted land has to be proofed by a document that certificated the previous ownership. In many cases documents had been lost, which has created conflicts between person claiming their property and the state authorities. The lack of documents for proving the property of former owners to allow the restoration of private property of forests and forest lands has been a cause for difficulties and conflicts between former owners or their inheritors and the authorities.

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# Policies indirectly affecting new forest owners in Europe

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## Introduction

Forest policies and forestland ownership have a reciprocal relationship: policies can affect ownership patterns, and changes in ownership can induce alterations in policies (Quiroga et al., 2015). For example, existence or lack of land parcelization regulations affects holding size distribution, and aging of landowners may ignite generational transfer programmes. Although demographic and value changes among forest owners have been widely recognized across Europe (see Živojinović et al., 2015), public policies primarily address societally important issues (such as timber supply, water quality, or biodiversity) rather than the changing forest owner types.

Consequently, the influences of policies on the new, emerging forest owner types, i.e. non-traditional owners, such as female owners or those with urban lifestyles or ecological objectives, are indirect and have rarely been addressed in research. Those indirect effects are side products of the policies that pursue other main aims, and those may be either i) foreseen and tolerated, or ii) unforeseen and possibly causing policy revisions. This paper aims to shed light on those indirect effects of forest policies on new forest owner types. Research questions are:

- 1) What kind of indirect effects can be outlined?
- 2) Which particular policies with obvious indirect effects can be found in Europe?
- 3) How could the analysis of impact logic add comprehension of policy effects?

## Material and Methods

As the first step, we analytically classified how the opportunities of new forest owners may be shaped by general forest policies. Second, we examined the 28 country reports of COST FP1201 FACESMAP (Živojinović et al., 2015) to gather and summarize obvious indirect policy impacts on new forest owners. Third, we selected the most illustrative policy examples, and adapting the principles from program theory evaluation (Brousselle & Champagne, 2011; Funnell & Rogers, 2011) described those with simple logic diagrams, which contemplates the aims and means, as well the prime and side effects of a specific policy.

## Results

In the analytic part, we considered possible influences that i) laws and regulations, ii) taxation and subsidies, and iii) informational “soft” policy instruments could generate to the opportunities of new forest owners and especially new types of owners. Four categories of policy were identified in terms of their indirect effects: prohibitive, hampering, enabling, and encouraging (Tab. 1).

**Table 1.:** Identified policy categories (indirect impact types), their numerical interpretations on scale -9...9, and hypothetical examples (the numerical interpretations are estimates to illustrate that the negative and positive categories are not symmetrical)

Policy category	Numerical interpretation of effect's direction and strength	Hypothetical example
prohibitive	-9	Minimum holding size: no "hobby owners"
hampering	-3	Tax easements for inheritance situations
enabling	+1	Electronic wood trading helps urban owners
encouraging	+5	Training courses for new forest owners

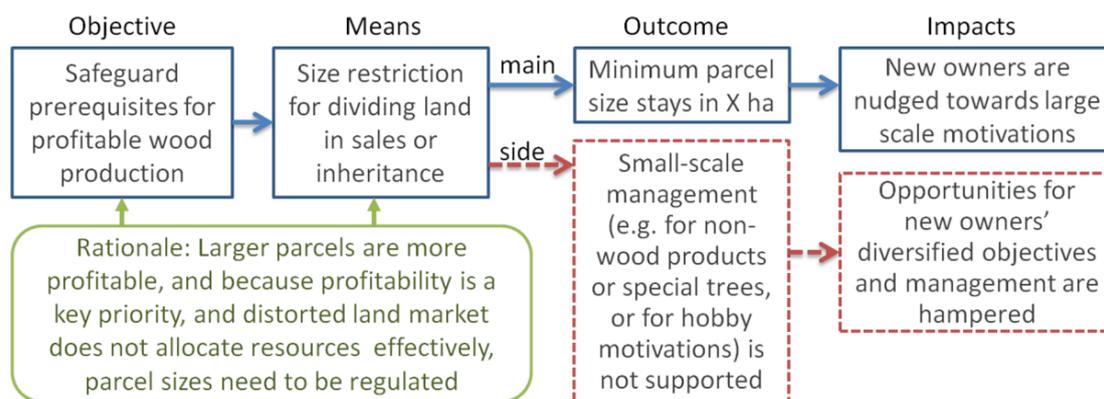
For example, property size regulations, which primarily target preventing parcelization, represent prohibitive or hampering policies for small-scale amenity-oriented or non-wood-products oriented owners. Meanwhile, an electronic wood trading service may represent enabling or encouraging policies that first and foremost aim to foster competition in market but has positive side effects.

From the FACESMAP country reports, a list of real-life policies with indirect effects on new forest owners was discerned and organized into Tab. 2. The list is not comprehensive but gives an impression of how and where policies indirectly affect the opportunities of new forest owners.

**Table 2.:** Identified real-life policies in Europe with obvious indirect effects on new forest owners

Policy (instrument)	Main aim	Indirect effect	Example countries
Inheritance rule to the eldest offspring	Prevent parcelization	<i>Prohibiting</i> non-traditional ownership	Austria, Norway, Spain
Land purchasing priority to neighbours	Prevent parcelization	<i>Hampering</i> : difficult to become an owner	France, Lithuania, Slovenia
Land division size restriction or extra payment	Prevent parcelization, safeguard profitability	<i>Hampering</i> small-scale ownership motivations	Austria, Slovakia, Sweden
Subsidies to afforestation	Sustainable land-use	<i>Enabling</i> new people to become owners	Belgium, Ireland, Romania
Establishing new legal forms of ownership	Achieving multiple societal gains	<i>Enabling</i> new goals and management	Belgium, UK
Legal and/or financial support to forest owners' organizations	Knowledge transfer, active management	<i>Encouraging</i> to acquire peer advice	Czech Republic, Croatia, Latvia, Norway
Activities to provide online advisory services	Modernizing forestry in the information society	<i>Encouraging</i> , in particular urban, younger owners	Finland, France

For more detailed illustration of the identified indirect policy effects, the impact logic was outlined into graphical representations (Figs. 1 & 2) for two exemplary policies, namely land division size restriction, and support to forest owners' organizations. The figures show the mediating mechanisms through which the side effects on the opportunities of new owners are shaped.



**Figure 1.:** Impact logic of restricting land division and obvious indirect effects on new forest owners

In the case of land division restriction, the rationale relies on economies of scale and importance of profitable wood production. The size restriction of land division, although efficient in regulating parcel sizes, make it more difficult for small-scale forest owners to enter the market and start practicing ownership that differs from the default large-scale wood production regime. The support for forest owners' organizations, in turn, relies on the assumption that owner's own organizations could effectively take care of advising, lobby and co-management activities. The kick-off support certainly helps in institutionalizing the new bodies. Potentially owners' organizations encourage new owners to take contact, but it remains up to local circumstances how well their specific motivations and needs become served.



**Figure 2.:** Impact logic of supporting forest owners' associations and obvious indirect effects on new forest owners

## Discussion

While there are hardly any direct policies targeting new forest owners (with an exception of training courses specifically for them e.g. in Finland) in Europe, this paper demonstrates that new forest owner types are in many ways indirectly influenced, either negatively or positively, by various forest policies. Examples can be found practically from all European countries, and similar examples from different regions, like Tab. 2 demonstrates.

In some cases the indirect effects are visible and thus easy to locate to specific actions, such as inheritance, while in other cases the indirect effects are hidden and take place in the longer run in the form of shaping owners' opportunities. Fig. 1 above shows that a simple restriction may favour traditional ownership and management types and as a side effect slow down the efforts of diversifying societal gains. Fig. 2, in turn, demonstrates that while direct effects are rather easy to identify, the direction of indirect effects may depend on local application of the policy. One may critically note that while Tab. 2 mainly sees the support to owners' organizations indirectly encouraging new owners, the organizations may also turn to traditional owners' clubs that hamper the fulfilment of objectives and motivations non-traditional owner types.

Impact logic diagrams, even as simplistic as the ones in this paper, might help policy makers distinguish potential non-intended side-effects. Understanding indirect effects of current policies on the changing forest ownership patterns is a key to reasoned future-oriented policy innovations.

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# Governance and management practices in public forests of local communities in Romania, a systemic approach

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**Keywords:** *Forest restitution, Archaic governance model, Illegal logging*

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## Introduction

As a result of the restitution process, started in 1991 (RO, 1991), more than 3 295 000 ha changed ownership in the last 25 years, in Romania (Curtea de Conturi a României, 2013). This represents approximately half of the total forests in Romania which are covering 29% of the country's area. (IFN, 2016).

The restitution itself seems to be a challenging task, since the restitution requests are exceeding with more than 575.000 ha the forest area abusively nationalized in 1948. In this context the public forests of local communities are representing 988 000 ha. (Curtea de Conturi a României, 2013).

Most of the forests owned by local communities are located in the nearby vicinity of the rural settlements, and they are providing for the communities not only timber but also non timber and numerous other environmental services representing a major green infrastructure asset for sustainable management of rural Romania, where little less than 50% of the citizens live.

The fact that forest ownership changed created the premises for illegal logging and led to the inclusion, in 2015, of the illegal logging as threat to the national security. In Romania the right of ownership was somehow more important than the usage right which aimed to protect forests from degradation as a result of a neoliberal (Bouriaud, 2008) and neoclassic economic policy, promoted by big industry.

Official data concerning the extension of illegal logging is very scarce and often contradictory, and it seems that there is a lack of transparency concerning this subject. Recently, in 2015 the ministry of environment issued that 8.8 million cubic meters of timber are illegally cut annually in Romania. This represents an important amount considering that the annual official cut was, in 2015, more than 18.1 million cubic metres (INS, 2016).

The questions that are pursued in this study are concerning two aspects, namely how and why changes in the ownership structure determined sometimes deforestation or forest degradation.

## Material and Methods

In order to investigate the governance and management practices in the public forests of the local communities a case study was carried on, for 13 months, at the local forest administration service of the town Săliște from Sibiu County, located in the central part of Romania. The service is administrating more than 10000 ha of forests, located in a bit more than 1000 parcels, out of which 6148 ha are public forests of the town Săliște.

As a result of the renewal of forest management plans in 2014, process which is carried on every ten years, measurements of the timber volume was carried on in all parcels using statistical or total inventories, with an admitted tolerance of 10%. A detailed analysis performed in 33 parcels selected and considered to be representative ones, showed a quantity of 13570 cubic meters of timber to be illegally cut during the ten years period. At the whole administration service level the estimated loss is somewhere around 6 million Euros, which represents a considerable and worrying amount of illegal money resulted from illegal or partially illegal logging.

For testing the malfunction of the forest governance system, including the control mechanisms of the governance and administration systems, an experimental approach was adopted. Therefore official complaints were sent to different stakeholders who in theory should be interested to correct such mall praxis.

In a first stage local authorities were informed including mayor, local council, local police and local forest inspectorate. After all this bottom-up actions were unsuccessful a second stage of the experiment was started which is based on a top-down approach. Therefore, considering that in Romania the tripartite power system is in place three others complains were sent to executive, legislative and a high-level judiciary court, in order to test how the system concerning the governance and management of the public forests of the local communities is functioning top-down.

At the beginning of the experiment a conceptual model of forest governance was made, based on the official data concerning forest governance in Romania. This model is shown in Figure 1.

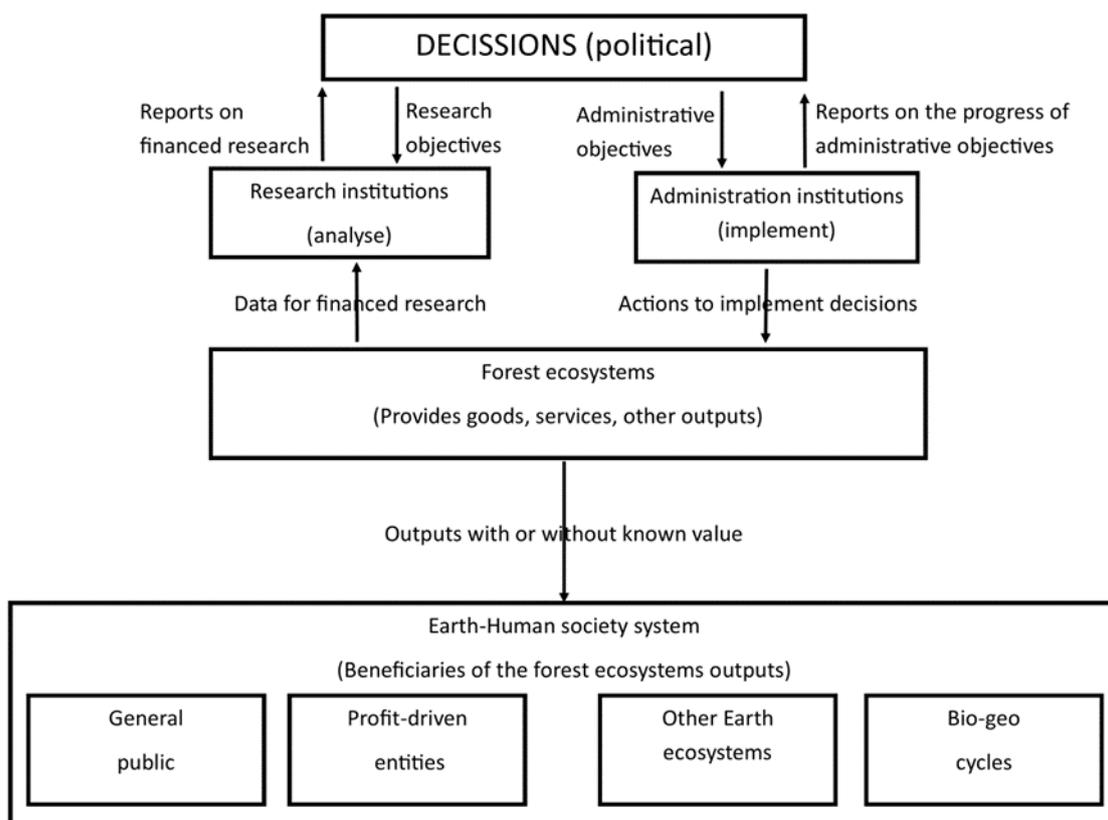


Figure 1.: Top-bottom forest governance model

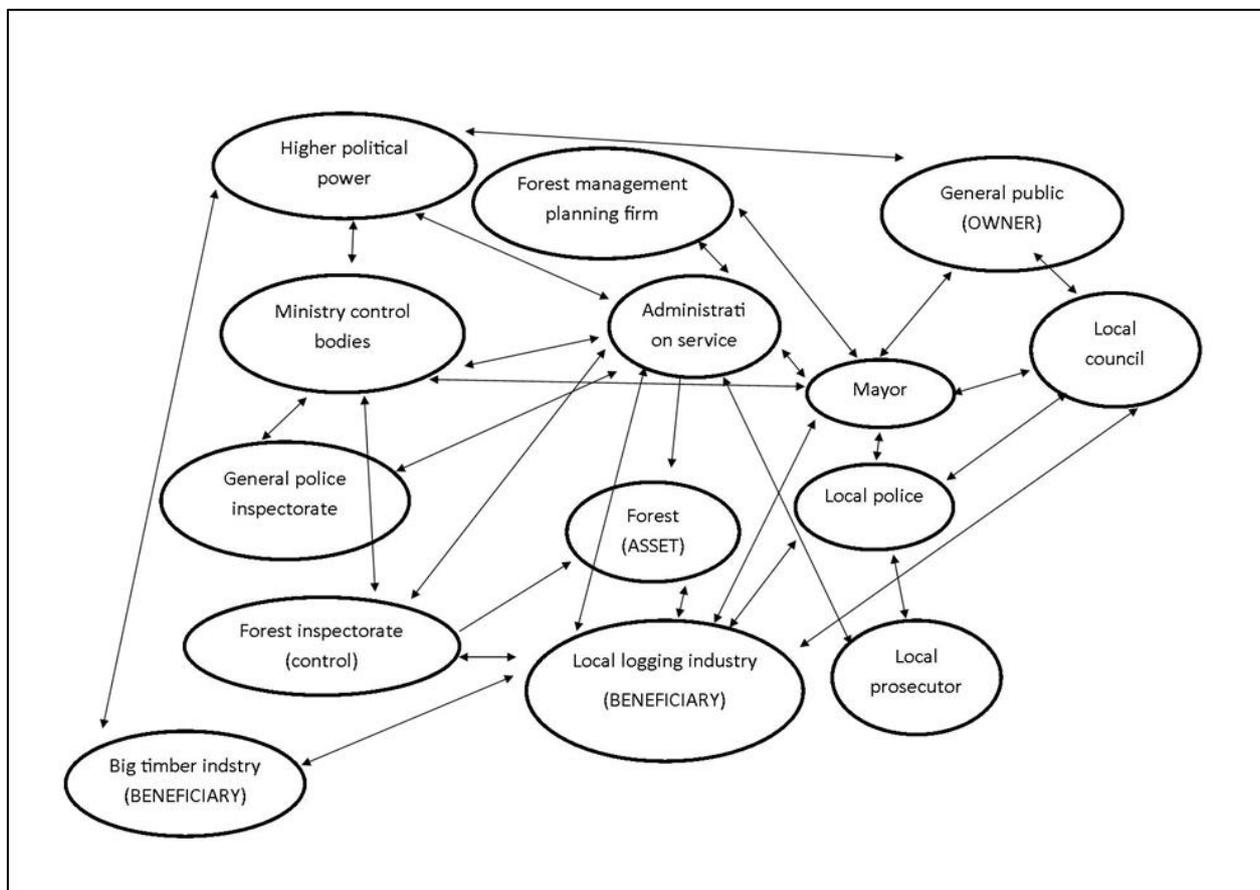
Because modern forestry appeared in a timber crisis situation, the governance structure had and continues to have, a rather pyramidal top-bottom shape (Rametsteiner, 2009) in order to ensure the control on the system. Such a top-bottom forest governance system is presented in Figure 1. In such forest governance system the main goal is control.

**Results**

So far, none of the official complaints regarding the impressive amounts of timber illegally harvested in the area had stopped the illegal or quasi-legal practices that led to the destruction of the forests of the local community. However some enquiries were started by prosecutors, but they are facing constant and ever stronger opposition of the local authorities which knew about the situation and did not act.

Considering the different inputs of the different stakeholders, as a result of complains, the network presented in Figure 2, of the governance system for the local forests was made.

An analysis of each stakeholder based on its success or failure to determine an improvement in the management practices is done.



**Figure 2.:** Connections that determine forest governance and management practices in public forests of the local community studied

**Discussion**

It is important to notice that the general public, which is the owner of the forest, is kept way apart from being a beneficiary of the cuttings. The cuts are done by local firms which are further selling the timber to big industrial complex. Also the local logging industry is the one carrying out corruption of the local authorities in order to allow the overcutting of the forests, while at national level the big timber industry, which is strongly political connected, is doing this task.

It is important to notice that the allowable cut in Romania expanded from 14 million cubic meters in 2002 to more than 20 million in 2015, which might be the effect of the lobby of the big timber industry.

As a result the forest is degraded, sometimes irreversibly when virgin forests are cut due to the fail, willingly or not, of certain institutions to act as they were supposed to.

The experiment is an ongoing process, despite the fact that no amelioration of the intensity of forest degradation is noted and more detailed results are expected in near future. It seems that corruption in institutions, at all levels, and lack of “forest literacy”, in the general public are two major causes of the current state of the forests in Romania.

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### Legal text:

RO, 1991, Land law no. 18/1991 (Legea fondului funciar, in Romanian)

## Role of forest owners associations in Eastern Europe

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**Keywords:** *private forest owners, interest groups, policy actors, participation strategies and tactics*

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### Introduction

The change of forest ownership in Eastern and South-eastern European Countries has been very significant during the last 25 years. Since beginning of 1990s, socio-political changes in Eastern and South-eastern European (EE and SEE) countries started, bringing with it land reforms, the restitution processes, privatisation and the transformation of the state forest enterprises. The private forestry in this region has been struggling with very small-scale individual properties, fragmented or joint ownership structure, unmanaged forests, lack of information and financial sources, as well as reactive and unstable forest policy and legal environment. In such circumstances the forest owners associations (FOAs) are generally considered as one of the most effective instrument to implement sustainable forest management, innovative multifunctional approaches including utilisation of ecosystem services, increase of competitiveness and strengthening of cooperation and communication of private forest owners.

All socio-political changes and mentioned processes had a significant influence on the FOAs creation (Jarský et al., 2014). However, very often private forest owners suffer from restrictive legal regulations concerning private forestry (Glück et al., 2011). One of the main reasons for the founding of FOAs was to protect and represent the common interests of forest owners in the policy-making processes (Sarvašová et al., 2015).

The aim of this paper is to describe the role of FOAs in forest policy-making at national level. The analysis include almost all EE and SEE countries: Bosnia-Herzegovina, Czech Republic, Croatia, Estonia, Hungary, Lithuania, Macedonia, Poland, Romania, Serbia, Slovakia, and Slovenia. FOAs are here understood as an interest groups organizing collective action, achieving critical mass (Olson, 1971), gaining mutual understanding (Ostrom, 1999), and setting appropriate rules, gaining finance and capacity building (McKean, 1998). We focus on comparisons in how FOAs access policy making processes, what techniques are used (Ellefson, 1992), and the perceived effectiveness of the lobbying by the FOAs themselves.

### Material and Methods

According to the aims of the study a mix of methods was applied. The main research method was a literature review and secondary data analysis. We used available information about the FOAs from EE and SEE countries as they can be found in the scientific literature (FAO, 2000;

Glück et al., 2011; FAO, 2012; Sarvašová et al., 2015; Živojinović et al., 2015). The interviews with representatives of selected FOAs conducted by the authors as well as the expert knowledge based on common terms of reference were used to gain a better understanding of national circumstances.

We identified the umbrella or the most representative FOA in each country and asked their representatives for an interview about the participation on forest policy formulation and how they perceived effectiveness of their activities (see Tab. 1).

**Table 1.:** Selected FOAs in EE and SEE countries

Country	FOA	Case study
Bosnia-Herzegovina	FOA "Naša Šuma"	Forest strategy of Republic of Srpska
Croatia	Croatian Union of Private Forest Owners' Associations	Act on Forests
Czech Republic	Association of Municipal and Private Forest Owners	National Forest Program
Estonia	Estonian Private Forest Union	Forest Law
Hungary	Federation of Private Forest Owners and Managements	Forest Law
Lithuania	Forest Owners' Association of Lithuania	Act on Forests
Macedonia	National Association of Private Forest owners in Republic of Macedonia	Strategy for Sustainable Development of Forestry in Macedonia
Poland	Polish Union of Forest Associations	National Forest Program
Romania	FOA "Nostra Silva"	Forest code
Serbia	Serbian Federation of Private Forest Owners' Associations	Forest Law
Slovakia	Council of the Non-state Forest Owners' Associations	Act on Forests
Slovenia	Slovenian Federation of Forest Owners Associations	Act on Forests

## Results

According to the results most of the FOAs are operating on a voluntary basis. The representation of owners' interest in the wider policy arena is one of the main objectives of all investigated FOAs.

Results show that the role of FOAs is an engagement in improving the status of private forest owners, but only very few improvements are documented as proceed. FOAs successfulness is mostly influenced by the lack of financial and human resources, the dominant position of the state forestry, lack of negotiations traditions and officials negative attitude to private forest property.

The most important factors affecting the influence of FOAs in the policy-making process could be divided into three groups: financial (lack of own capital and/or subsidies), political (legitimate power, standard comment procedure, lobbying) and social (power of the state sector, reluctance of owners to organize themselves, limited knowledge and information share, weak leaders).

Ellefson (1992) on the base of empirical research expressed the most important ways of interest groups participation according to their use. From top 10 techniques (used by more than 80% in general) FOAs in EE and SEE countries are using all with exception of Sponsorship Campaigns (see Tab. 2).

**Table 2.:** Participatory techniques FOAs in EE and SEE countries

Interest groups strategies and tactics	FOAs use
Taking part in parliamentary and governmental meetings	x
Communication with government officials and presentation of ideas	x
Informal meetings with government officials at meetings and events	x
Building coalitions with other stakeholders	x
Discussing policy alternatives in press and media	x
Consultation with government officials because of planning legislative strategy	x
Help government officials when drafting legislation	x
Sponsorship Campaign	
Growing lobbying efforts in membership	x
Influential contacts in legislative offices, institutions which draft law	x

For promoting members' interests FOAs are mostly invited to official meetings and in some cases their representatives are obligatory members of preparatory committees and commissions (Lithuania). In other cases, the public campaigns and grassroots activities were successful (Romania). Furthermore, in other cases, the educational and awareness raising campaigns have been successful (Serbia, Slovenia). We find that rule making continues to be a primary concern of FOAs trying to influence forest policy.

## Discussion

Private forest owners are still rather inert in lobbying for improvement of their position in forest policy arena. Their FOAs suffer lack of financial resources and a strong countrywide organizational structure. This situation results from huge fragmentation of private forest ownership on one hand, and unwillingness of forest owners to associate, which is the legacy of the communist period in EE and SEE countries (1945-1989). Success of the lobbying process depends to a great extent on the personal abilities of FOAs leaders and available financial resources.

Since societal and forest sector reforms in EE and SEE societies are rather slow and unstructured, FOAs are developing fast and sometimes they have a problem to survive without external support (e.g. the government/EU subsidies or other financial contributions from non-forestry sector). But still they are acting as an important inventive actor in policy processes. The majority of FOAs representatives are unsatisfied with the visibility and achievements of private forest owners in their countries and they are calling for "stronger" actions. In opposite with this statement they have focused more on participation in working groups and meetings with authorities during the negotiation process than on taking part in demonstrations and protests.

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Parallel session 7: Evolving commons – renewal of a traditional ownership type?

# Legitimizing institutional choices in the forest ownership

## *Building acceptability for jointly-owned forests*

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**Keywords:** *Forest ownership, identity, jointly-owned forest, institutions, legitimation*

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### Introduction

Recent demographic changes in the forest-owner structure are suspected to have led to the increasing number of owners with no specific objectives for their forests (e.g., Butler and Leatherberry 2004; Leppänen 2010). In addition, the continuous fragmentation of the forest holdings has increased the threat of the passiveness related to forest management. To decrease the tendency towards passiveness, new policy tools and initiatives have been suggested. In the Finnish context, the idea of an investor-based jointly-owned forest (JOF) has been introduced as facilitating the effective utilization of the forest resource. However, collective ownership has faced prejudice and scepticism among private forest owners. In order to expand, the forest owners need to see the idea of JOFs as a socially legitimate.

In this paper, we examine the discursive legitimation accounts of private forest owners who describe their personal decision to become a JOF shareholder. The legitimation process is approached similarly to Van Leeuwen (2007) as an answer to the spoken or unspoken question 'Why should we do this?' or 'Why should we do this in this way?' In other words, legitimation is understood in this paper as a more or less deliberate discursive process by which speakers justify JOFs by making discursive judgements regarding their propriety and validity as a form of forest ownership. Accordingly, this paper aims to answer the following research question: What kind of discursive legitimation strategies do forest owners use in order to justify a JOF as the socially accepted form of forest ownership and how do they use them?

### Material and Methods

As in this study we wanted to find out how forest owners legitimate their "untraditional" solution (i.e. participating in a JOF) and motives to change their current ownership form - instead of keeping the traditional forest owning (i.e. not participating in a JOF) - the data was gathered among those forest owners who already were members in a JOF. Accordingly, the empirical data of this study consists of interviews with 20 private forest owners who all had joint interest in the same investor-based JOF. The interviews dealt with themes such as personal forest-owning history, the motivation for becoming a JOF shareholder, experiences of the JOF establishment process and the operation of the JOF.

The data analysis method applied in this study was discourse analysis which examines how social reality is created by historically and contextually situated discourses (e.g. Alvesson and Kärreman, 2000; Phillips and Hardy, 2002). Discourse analysis focuses on how and why the social world comes to have the meaning(s) that it does (Phillips and Hardy, 2002). Thus, a discursive perspective means that legitimacy is built, in the course of time, through the discussion, meaning-making and debate (discourse), regarding the appropriateness of institutions and social entities. We therefore study how the legitimation of a JOF is represented through various discursive moves.

## Results

The results show how legitimation through authorization, moralization and rationalization are accomplished in the context of jointly-owned forest, thus enabling us also to better understand the argument for the decision to become a JOF shareholder. In addition, the results verify that the various legitimation strategies in the JOF context were often intertwined with each other, which also reflects the challenging nature of the decision-making process. The following table (see Tab. 1) summarizes the main results of this study by presenting the way each of the three legitimation strategies are constructed and the main reason why each can be considered effective in legitimizing the idea of JOFs among private forest owners.

**Table 1.:** Summary of the main research results

Legitimation strategy	How is the strategy constructed?	Why is the strategy effective in increasing the legitimacy of the JOFs?
Authorization	Legitimizing JOFs based on the forest owners' own or others' knowledge and expertise (media, forest advisors, municipality) or based on traditions	Legitimation through authorization honours the forest owner's sense of autonomy when making decisions concerning the forest
Moralization	Legitimizing JOFs based on emotions by emphasizing the moral responsibility one has towards the forests	Legitimation through moralization reinforces/constructs the identity of a moral forest owner who maintains the well-being of the forest as well as the next forest-owner generation
Rationalization	Legitimizing JOFs based on instrumental benefits by emphasizing the economic and personal utilities that derive from joining a JOF	Legitimation through rationalization highlights the idea that the loss of control over one's forest area is well compensated

## Discussion

Although the legitimation strategies presented in this study are context-specific in the sense that they are used to justify a certain type of forest ownership innovation in Finland, we nevertheless suggest that these legitimating strategies are also likely to characterize other institutional innovations in the forest-owning settings, as these innovations usually change the perceptions of ownership, and thus affect the forest-owner identities. Furthermore, we also suggest that it is important to see that in legitimizing new forest-related innovations, owners are often strongly influenced by the prevailing dominant macro-level discourses (e.g., Deci and Ryan, 2008), particularly in this case, the national forest policy discourse, which has been effectively distributed to the owners through various information and extension services, as well as policies and legislation.

It should be recalled, however, that legitimizing JOFs as new institutional practice among private forest owners did not solely reflect the macro-level policy discourse. Thus, while the national discourse is mainly emphasizes national economic benefits of timber production, the legitimation strategies used by forest owners were often imbued with a variety of values. The emotional values of forest ownership, i.e., the idea of as an intergenerational link and an emotional anchor to certain geographical area, strongly influenced the essence of the legitimation strategies particularly, and forest owners' decision-making processes more generally. In addition, it is important to recognize that during the legitimation process, the forest owners similarly reproduce their new identities. Thus, our study demonstrates how macro-level initiated changes in forest ownership cannot be motivated at the micro-level by merely drawing from economic incentives. Instead, in order to be successful, such institutional changes need to be supported by moral responses as well. For example, JOFs could profile themselves through different value promises to better meet the private forest owners' needs. This could support the creation of JOFs to meet the needs of those forest owners not endorsing the economic values, while still enhancing the utilization of forest resources in general. The legislation should be flexible enough for this as well.

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# The challenges of coordinating forest owners for joint management

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**Keywords:** *Social innovation, Forest Owner Association, Joint forest management, Adjacency externalities, Social Capital*

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## Introduction

Private forest estates in Spain cover 19 million hectares and represent 70% of the forest area (Rojo Alboreca, 2013). 84% corresponds to family owners, 12% to collective forests (*pro indiviso*), 3% to communal forests and 0.6% to industry-owned forests. This implies over 5.2 million forest owners, 99% of whose parcels are smaller than 10 ha (Rojo Alboreca, 2013). This fragmentation entails profitability problems of individual forest management. In addition, a landscape-scale management bring about adjacency externalities, like wildfire prevention, plagues, invasive species or green corridors. Owners' associations for joint forest management constitute, then a tool for effective landscape-level management (Górriz-Mifsud et al., 2016). This requires activating social relations, coordinating different interests and expectations. Rural communities using these relations for their development held a high and positive social capital (Coleman, 1988). Social capital is useful both at the individual and collective levels, which can positively lead towards monetary benefits (more bargaining power) and non-monetary benefits (recognition), but also negatively towards the so-called "dark side of the social capital" (e.g. mafias).

## Material and Methods

Scientific publications and grey literature on joint forest management have been analysed from a technician's perspective, focusing on the social capital features. Their findings have been contrasted with the legal framework in different regions of Spain.

## Results

### 1. Challenges for joint forest management

Taking the perspective of a forest technician aiming at effective joint forest management, fourteen aspects have been identified as key challenges, as follows:

1. The procedure for making decisions. It is critical, given that all group members lose some part of decision power over their forest parcel. Reaching consensus might be difficult in contexts of heterogeneous preferences (Lidestav and Arvidsson, 2012). Agreeing in how decisions are made provides legitimacy and acceptance. Usually a majority rule is applied in votings, delegating operational decisions to an executive board and holding periodic general assemblies for strategic decisions. These aspects are reflected in the legal form of constitution (e.g. non/for-profit), the statutes, and the internal working norms (control, infractions, sanctions, membership termination). These legal aspects might imply barriers (Navascués and Llobet, 2007).

2. Fiscal and legal aspects of business models. The different legal and patrimonial consequences of each legal figure (Cots and Viñas, 2013) have to be taken into account from the group perspective: whether the group is circumstantial established (e.g. for post wind storm restoration, like in Catalonia), to more stable associations (e.g. for biomass supply to a local bioenergy plant).

3. Communication channels. Reaching all members requires large efforts but implies better results. A balance should consider appropriate means depending on owners' profiles. Social network analysis helps identifying the local "hubs" ("bonding" social capital), which efficiently spread information among (potential) members. "Peer-to-peer" learning (e.g. through field visits) emerges as revealing in cases of new issues or technologies: landowners learn from the experience of someone similar to them (Schubert and Mayer, 2012) reinforcing their "bridging" social capital. Moreover, involving local politicians helps smoothing some group needs (e.g. logistics) but can also better connect with supramunicipal bodies (the "linking" social capital), who eventually may help in the implementation.
4. Communication codes. Technicians talk between the technical and informal language ("cognitive" social capital). They have to be prepared to explain and clarify from latest technological innovations to the basic forestry concepts. Empathy is required to adapt to the context, especially when dismantling "myths" is required to progress in the group work.
5. Geographic cohesion. Traditionally, associations appear through voluntary ascriptions, which often results in not necessarily homogeneous areas. That implies less effectiveness for forestry works and other objectives (e.g. fire prevention). Another approach entails selecting a key zone and work towards convincing their landowners to manage jointly. The intense labour for contacting each landholder could be covered by public funds based on the positive externalities.
6. Transparency. Easy access to group information contributes to create and maintain trust. Secretary and treasury become crucial for transparency, reflecting decisions, costs and revenues, and their sharing among members.
7. Trust (relational social capital) is necessary to work together. In forest owners' groups, trust emerges among members, towards the intermediaries (e.g. technicians) and to the institutions (e.g. town council). Trust is the easiest aspect to lose and the one which lasts the most to be built. Trust to technicians is key insofar as they are reference points for choosing management strategies (Primmer & Karppinen, 2010; Van Gossum et al., 2005). Furthermore, forest owners facing high uncertainty and complexity rely on trustworthy people and organisations, adopting their mental models (Schlüter and Koch, 2009). Recurrent meetings bolster interaction among members, establishing new "weak ties" with unknown people and reinforcing "strong ties" with known ones. Rickenbach (2009) showed that association members tend to talk with closest members and technicians (strong ties) and consider the rest as trustworthy (weak ties).
8. Fairness versus efficiency in splitting costs and prioritising actions. Efficient (Pareto-optimal) management decisions sometimes entail collective benefits but are detrimental for a member. Compensation mechanisms that internalise such negative effect are needed.
9. Local idiosyncrasy. The local *savoir-faire* (informal norms, codes) is relevant for working immersed in the culture and selecting business models (Ambrosio Torrijos et al., 2003). Still some dynamics may hinder a better functioning of the group, requiring argued explanations.
10. Flexibility and risk aversion to long-term commitments. Uncertainty and novelty generate worries among potential members, who prefer flexible contracts with progressive commitments.
11. Involvement of members in the executive board. Members who voluntarily engage with a directive role must be elected by members and work for the common interest (Mendes et al., 2011). Rotations help overcoming burnt out of initial enthusiasms, and to avoid "cacique"-type of dynamics in the long-term governance. A compromise is to be found between the fatigue of contributing executives and the efficiency and experience of rather stable positions.
12. Windows of opportunity to go forward: common interests constitute triggering factors for grouping individuals. Motivations for forest management of members allow aligning their demands towards a common project, managing elements of individual preferences in front of elements of cooperation among forest owners (Kittredge, 2005).

13. Efficiency of the intermediary. Efficiency is required for group management, which is linked to transaction costs derived from (i) documenting forest owners' contacts, (ii) approach to contract forestry works, (iii) landowners' proximity to their forest, (iv) method to reach agreements, i.a.

14. Attractive long-term vision. The shared understanding of mutual benefits of joint management helps overcoming initial problems, especially when the economic return is not high. Dynamic agendas keeping members' inquisitiveness fulfilled help maintaining the medium-term relation.

## **2. Policy tools in Spain supporting joint forest management**

Bolstering joint forest management among private landowners in Spain is based either on the Forest Act of some regions or on the associated benefits. Some regions are financially supporting joint forest management through the following policy tools:

- generic subsidies for associations, see in Asturias or Navarra;
- specific subsidy lines, e.g. for fire prevention in Barcelona province;
- prioritizing subsidy applications from groupings, e.g. SFM subsidies in Catalonia; or
- increasing subsidy rates for groupings, e.g. aids for forestry works in Navarra.

With the recent amendment of the Spanish Forest Act (law 21/2015), a new legal figure for private joint forest management is established. The "Forest Societies" aim at reactivating the forestry sector through fiscal incentives to those forest owners who cede their forest use rights during twenty years or more to the company of which they become shareholders. The idea is that they become for-profit partnerships between forestry companies and landowners. In practice, in a context of inactive landowners who share costs in the best case (e.g. current associations, certification groupings), this figure is seen as suspicious.

## **Discussion**

Joint forest management has been found as reducing members' transaction costs and increasing geographic coherence of forestry interventions. From a weak or inexistent network of communication among private forest owners, forest groupings aim at establishing operative collaboration platforms which, in the end, underpins the social capital of the community where they live in (Górriz-Mifsud et al., 2016). Fourteen success factors are identified in the legal, administrative, communication, social and economic aspects. for technicians and policy makers .

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## “Fade out” or “Jump in”?

### *Forest ownership of small scaled forests in Bavaria – Activating forest owners and strengthening their “Forest-owner-identity”*

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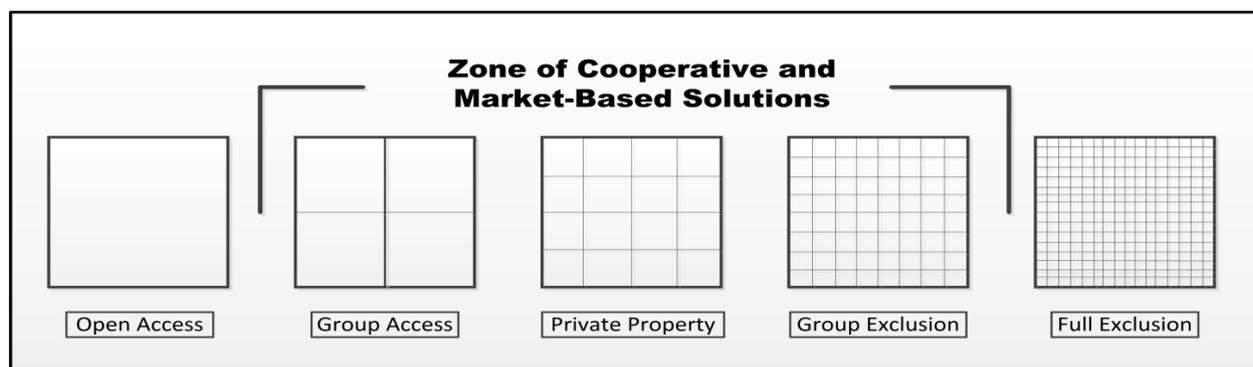
**Keywords:** *Small scale forest owners, Fragmentation, Marginalization, Urbanization, Forest Land Consolidation*

#### Introduction

Regarding the area, Bavaria is the largest state of Germany. It is located in the southeast and 36 % of its surface is covered by forests. Of the almost 2.5 Million Hectares of forests, 57 % are privately owned by nearly 700.000 individuals and companies (Bayerische Landesanstalt für Wald und Forstwirtschaft, 2014). During the last decades and still ongoing, urbanization and industrial development caused a structural change with deep impact into the agricultural and forestry sector and the rural regions. Through repeated divisions in some parts of Bavaria, forest parcels became smaller and smaller and the number of owners rose. Over 70 % of the forest holdings are smaller than 2 Hectares and the changing lifestyle of the owners shows problems in maintaining a sustainable forest Management (Ziegenspeck et al., 2004).

In former studies about the private forest sector small forest owners (up to 2 ha) were frequently underrepresented according to their number. Their motives and attitudes are not totally different compared to bigger forest holdings, but regarding those small owners one can attest that they are most distant from profit incentives and a process of marginalization is taking place, where in the end there might be no forest management at all or just reaction in “cases of emergency”. The Bavarian forest policy and strategy aims to include as much forest owners and forest area as possible into the regime of multifunctional and sustainable forest management. Therefore, in a special study work was concentrated on the group of small forest owners up to 2 ha and on measures that touch the “core-values” of Landowners which mark the strongest or in other words the last bindings between the owner and his/her property.

The study follows the property-theory of the “Commons–Anticommons-System” as Heller described it: “The danger with fragmentation is that it may operate as a one-way ratchet: Because of high transaction costs, strategic behaviors, and cognitive biases, people may find it easier to divide property than to recombine it.” (Heller 1999, p. 1165–1166) (see Figure 1).



**Figure 1.:** “The full spectrum of property”, Heller (2001), modified from (Heller 1999).

In a System of well-functioning private property, owners have all the rights of the total property-rights bundle (right to possess, right to use, right to manage, right to the income, right to consume or destroy, right to modify, right to alienate, right to security, incident of transmissibility, incident of absence of term, prohibition of harmful use, liability to execution) in their hands and they use it. In an extreme form, fragmentation leads to an Anticommons-Situation.

In forest areas with a high proportion of small ownerships fragmentation of the forest parcels and especially of the property rights has reached this Anti-commons situation and is still proceeding. The assumption is that profound structural improvement measures as the voluntary exchange of land or the land consolidation in those forest districts are able to cause meaningful and lasting changes in the ownership and the way owners manage their forests. And for those owners who do not want to be responsible for a forest it offers a good opportunity to withdraw from the ownership.

## Material and Methods

Two groups were identified and data was collected with postal surveys (in 2012). In the first group only small scaled forest owners were assembled randomly which have not been involved in a structural improvement measure before (2639 questionnaires). In the second group 948 questionnaires have been sent out to small scale forest owners which have participated in a voluntary land change or in a land consolidation. Except the special questions concerning the measure itself, questions were similar in the two questionnaires. In the first group 385 answers could be used for the quantitative analysis in the second group 201. Both datasets have been analysed in 2013 and 2014 with SPSS (Version 20). Beside the descriptive evaluation some of the survey questions have been assessed with a factor analysis.

## Results

Looking at the socio-demographic data, no significant difference between the two survey groups can be seen. The second group (with structural improvement measure) was in average 3 years younger and therefore there were also fewer pensioners. In both groups nearly 90 % of the respondents have inherited their forest parcels; about ten percent have bought their forests actively. The answers regarding the management show more differences, as those who have participated in a land change or consolidation are using their forests more actively (see table 1).

**Table 1.:** Answers of both groups to the question regarding the usage of the forests

<b>Joint presentation of the results of the questions regarding the usage in forests of the two survey groups</b>		
<b>Question</b>	<b>Small scale forest owners</b>	<b>Ssfo after structural impr. measure</b>
Yes, I use my forest	69,9 %	85,1 %
No, I do not use my forest	30,1 %	14,9 %
Self-consumption fuelwood	65,5 %	93,9 %
Fuelwood for others	5,5 %	< 1 %
Self-consumption Constr.-wood	19,7 %	35,7 %
Construction-wood for others	9,9 %	<1 %
Miscellaneous	1,8 %	< 1 %

Questions that touched the attitude or perception of the owners have been assessed with a factor analysis to find out what factors stand behind. The results of the question "I see my forest as..." (containing 10 different Items) are shown in Figure 2. In the group with no measure only factors could be identified dealing with the personal sight onto the ownership (Factor 1) of forest and the negative effects forests can imply. In the second group, where all the participants in the structural improvement measure had to actively consider what to do with their forest parcels, a third factor could be extracted. A factor that shows a different view on the own forest property and its services for the owner and the society.

10 % of the participating owners in the measures took the opportunity to sell their parcels to a “pool”. From this “reserve” forest roads could be built or “hotspots” of nature conservation could be secured or those who wanted to expand their forest property were able to buy. Those who sold were extremely satisfied too.

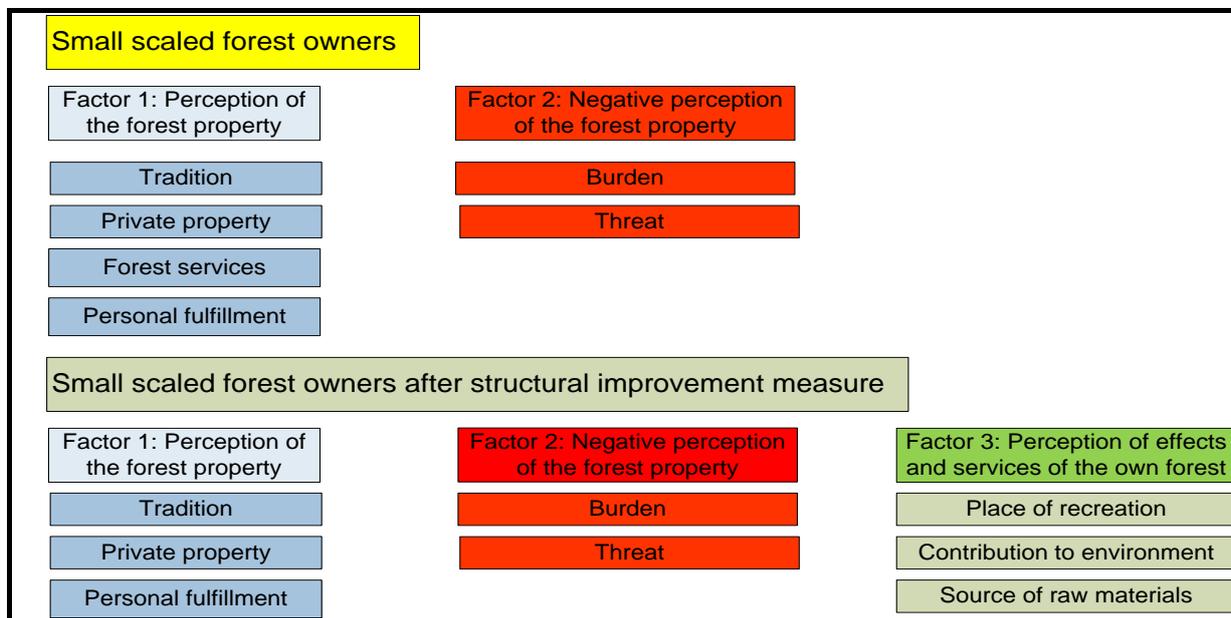


Figure 2.: Results of the factor analyses of the question “I see my forest as...” in the two survey-groups

### Discussion

Conclusions are difficult to generalise for whole Bavaria or even beyond because of the high nonresponse rate which is always a problem in surveys. It is extremely high in the group of small scale forest owners (here over 80 %) because they are seeing their selves not as forest entrepreneurs. And they surely do not behave like the market would expect it (Schraml 2012, p. 64). But what can be stated is that those who went through such a structural improvement measure have a different view on and as it seems a different relationship to their forests. After such a measure they have a forest which is (in average) bigger, better shaped, with a connection to a road, with marked borders and with the full bundle of property rights which can be used again. If they evaluate the measure in retrospect, they are extremely satisfied also with the way the measure was processed and with the results. The survey results also confirm the findings of a qualitative study in the same context done by Gaggermeier (2014).

In the last 3 to 4 decades forestry as a business has developed rapidly. Cost effectiveness, professional structures on almost all levels, mechanisation in harvesting and wood processing increasingly prove to be an insurmountable hurdle for small forest owners. So it seems that there are only two strategies to choose regarding those owners where on one hand market requirements become more difficult to meet and on the other hand marginalisation and fragmentation are proceeding and in the end forest management is declining. Common measures offered by the Forest Service like counselling, joint harvests, subsidies for silvicultural measures or road construction are not eligible to reach a greater number of these small owners. The portfolio of Organisations like forest owners associations, which have been founded and supported to overcome the disadvantages of small and scattered ownership are reaching the limits of profitability. And their standard offers are often not matching with the goals and needs of the new and small owners.

So following the Bavarian forest policy action has to be taken to stop the movement of marginalisation and fragmentation that causes a growing share of underused and not properly managed forests. So questions like “What measures go deeper and touch the relationship

*between the owner and her/his forest estate?”, “What occupies the attention of the owners to get “re-involved” in their forests?”, “Are there owners who like to “exit” the ownership and the interwoven responsibilities?”* have to be answered. The results of the two surveys in Bavaria show that there are those measures. They prove that the voluntary land change and the forest land consolidation bring it to the point. For owners it marks either the starting point of a new engagement to actively manage their forests or after consideration it offers the opportunity to give up the forest land. It is not a “cheap win” but to lose more and more of those owners and their forests will in the end be more expensive. A first scan of the state-wide situation revealed that about 300.000 ha could be reorganised within structural measures. The positive effects of land consolidation are exceeding the costs by far (Hinz, 2012).

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Parallel session 8: Forest owners and the provision of forest ecosystem goods and services

# Attitudes towards forest ecosystem services provision: *what drives the choices of private forest owners in the Veneto region of Italy?*

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**Keywords:** *Ecosystem Services; multinomial models; Non Industrial Private Forest Owners (NIPFs); forest management; Mediterranean forests*

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## Introduction

While demand for Ecosystem Services (ES) rapidly increases both internationally (Kumar, 2010) and locally (Croitoru, 2006), the potential of farmers and forest owners/managers as active providers of such services also grows. Yet, although a fairly large body of literature exists on determinants of forest owners' choices for harvesting and reforestation choices or land-use changes (see e.g. Joshi and Arano, 2009; Rodríguez-Vicente and Marey-Pérez, 2009; Ní Dhubháin *et al.*, 2010 among many others), what induces forest owners to shift from raw material production to ES-provision management models is still scarcely known or documented. Studying forest owners' choices can also contribute towards prompting more targeted and tailored measures when incentive schemes or market-based mechanisms for ES provision are promoted by international, national or local institutions (Blanco *et al.*, 2015) and this offers an additional reason for paying attention to this issue.

In Southern European countries like Italy, the concern of understanding forest owners' choices is even more urgent. Here, private forestry is mostly characterised by fragmented ownership, marginality of production and widespread abandonment, while vast research points out that inaction of forest management is associated to high environmental risks like forest fires, land erosion, increased vulnerability to biotic and abiotic factors (FAO, 2013). Such risks, now exacerbated by climate and global change, need appropriate policy responses targeting different components of the ES spectrum. However, studies on forest owners' management choices in Southern European areas are really scanty in the already scarce specific literature: contributing towards filling this knowledge gap is the first objective of our paper.

## Material and Methods

The literature on what motivates forest owners' choices is dominated by Northern American and Northern European case studies and by a productive emphasis. A large strand of such papers deal with Non Industrial Forest Owners (NIPFs) as a variegated group of forest actors moved by a wide set of motivations and attitudes. Traditionally, this literature points out that NIPFs' objectives depend on a large number of exogenous and endogenous factors, usually classified in four categories: ownership structure, owners' behavioural and attitudinal features, characteristics of policy measures and market drivers (Beach *et al.*, 2005). Based on a literature review, we identified a number of variables which we posit may affect the NIPFs' choices: owner's and ownership characteristics, natural capital features, ownership history and future perspectives, adopted forest models and management practices. We then estimated a multinomial logistic model (Greene, 2003) to identify the factors affecting private owners' willingness to adopt a given ecosystem-service-oriented management. Three specific ES have been considered: i) forest biodiversity; ii) averted soil erosion; iii) Carbon sequestration. Forest owners were asked to state their willingness to provide the ES. Three options were available: willingness to provide the service only in return of a payment in the frame of a public incentive policy; willingness to provide

the service without any payment; unwillingness to provide the ES, regardless of payment. The last option represents the baseline in our model.

As case study, we choose the Veneto region, located in North-eastern Italy. According to the last Forest inventory (IFNC, 2005), 66% of forest land is privately-owned in the whole Veneto. Of this, as much as 82% is owned by individual owners, which may be assumed as being NIPFs. In Veneto there is still a certain vitality in the local markets for timber, fuelwood and other forest products, as well as potential opportunities for forest market innovations: this gives sense and meaning to our effort of studying what may determine forest owners' choices. We focused specifically on the mountainous areas of the region, where most of the forests are located and the issue of ES provision is more urgent, as mountainous forests in Veneto are an essential component of landscape, a fundamental asset for the tourist sector, contribute towards biodiversity conservation, play a crucial role in averting erosion and may represent a significant Carbon sink (Gatto *et al.*, 2010).

Our data were collected by means of a structured questionnaire through face-to-face interviews with forest owners from April to November 2012. The process of the sample selection was not an easy one, as in the region (and in the country) there are not updated forest owners' inventories or cadastres and even the statistical census-based data are obsolete. According to the last available one (ISTAT, 2000), there are approximately 14 thousand private forest owners in the case study area, most of which are however part time farmers or absentee landowners. We selected our sample from the regional database of those applying for forest harvesting authorisations in the last ten years, this being the only available dataset of forest owners in the region. As this list includes only those with an active attitude towards forestry, we corrected this bias by enlarging the sample through a snow-ball technique, i.e. the interviewed were asked to provide addresses of neighbours or of other forest owners not included in the list: in this way we reached the less active forest owners and included them in the survey. We also considered the geographical distribution of owners from the eastern to the western part of the region. Our survey ended up with 106 private forest owners interviewed.

## Results and discussion

The estimated model coefficients are reported in Table 1 below, which expresses the effect of each independent variable on the owner's willingness to provide a given ES (under public support or without any payment) with respect to the baseline, i.e. unwillingness to provide the ES, regardless of payment.

In the biodiversity model, the forest owners willing to provide the service only in return of a payment were found to have a higher perception of the economic value of their property (ECON\_VALUE), while those willing to provide the ES even without payment had owned the property for a longer time (OWN\_AGE), have a higher number of children (SONS), attach to their forest estate a sentimental value (SENT\_VALUE) and are more inclined towards self-consumption of their wood products rather than selling them into the market (SALES). In both cases (providing ES with or without payment), forest owners have a low level of education (EDUC) and – compared with the baseline – perceive that their forest management already protects biodiversity (MANAGE\_SERV). These results are in line with the findings by Beach *et al.* (2005), who highlighted in their review that ES provision is positively affected by a certain level of biodiversity already existing in the forest. To a certain extent, they also confirm the results by Campos *et al.* (2009) who, for Spain, pinpoint how both the perception that the property has a value, either economic or sentimental, supports the acceptance of opportunity costs oriented towards production of amenity values for owners and its family. In parallel, the willingness to provide biodiversity services by NIPFs in Veneto, with or without payment, can be interpreted as a response to the need of fulfilling the owners' private objectives of self-consumption of biodiversity, rather than of meeting objective of public good provision. This would also be in line with the finding that forest owners seek utility maximization rather than profit maximization (Amacher *et al.*, 2003; Conway *et al.*, 2003; Domínguez and Shannon, 2011). This attitude is

strengthened by bequest values and the vision of forests as legacy for children (Coté *et al.*, 2015), as shown by the coefficient of our variable SONS.

In the averted erosion model, those willing to provide the service of hydrogeological protection only if they are paid for doing so, are again more oriented towards self-consumption (SALES), while their forest has a predominance of conifers rather than broadleaves (F\_TYPE). This seems to stress a need for payment covering the higher productivity of coniferous forests, which are indeed the forests more oriented towards timber production in the region. This interpretation is confirmed by the parallel finding that the forest of those willing to provide the service without payment has more broadleaves or is a mixed forest, implying that such forests already have a less production-oriented focus. For both groups of forest owners willing to provide ES, the subjective perception that their forest management is already targeted towards averting erosion (MANAGE\_SERV) plays a positive role with respect to the baseline similarly to having already experienced problems of landslides and soil erosion in the property (LANDSLIDE). This signals that practices of averted erosion in the forest may be perceived, in some cases, as a factor of production rather than an outcome. As in the previous model, in both cases, these owners have low education levels and this is consistent with Beach *et al.* (2005) who found similar results for multi-objective owners.

Finally, in the Carbon sequestration model, the owners willing to provide such service only when paid have a forest where conifers predominate (F\_TYPE) and moreover perceive that they are already contributing, through forest management, to such service (MANAGE\_SERV). NIPFs willing to provide the service even without payment have mostly broadleaved forest (F\_TYPE), and this is consistent with the findings of the previous averted erosion model. Landowners who own the property since a lower number of years (OWN\_AGE) are slightly more likely to engage in providing the service without payment, as also found by Rickenbach and Kittredge (2009), who claim that shorter durations of ownership positively affect other management objectives than productive ones. Additionally, those willing to provide the service without payment are generally older (AGE) than the unwilling ones. However, impact on age on ES provision is a matter of controversy in the literature, with findings stating both its positive effect (Beach *et al.*, 2005) and the opposite (Joshi and Arano, 2009).

## Preliminary conclusions

The paper wants to shed light on what affects forest owners' decisions towards ES provision in North-eastern Italy. We have shown that the perception that the forest is already oriented towards production of ES generally affects positively the willingness to provide the services, in some cases even without payment. This perception may respond to patterns of self-consumption of intangible values by the owner and its family. These findings need further exploration, as they can have strong implications in terms of designing incentives or other market based mechanisms.

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**Table 1.: Multinomial logit model estimated coefficients <sup>a</sup>**

	Variables	Services		
		Forest biodiversity	Averted soil erosion	Carbon sequestration
Willingness to provide the service only in return of a payment	INTERCEPT	-5.632 (2.533) **	-3.437 (1.987) *	-3.304 (1.924) *
	[F_TYPE = Coniferous]	0.866 (0.713)	1.091 (0.620) *	1.409 (0.582) ***
	[F_TYPE = Other]	0 (.)	0 (.)	0 (.)
	OWN_AGE	0.004 (0.007)	-0.004 (0.005)	-0.006 (0.005)
	[EDUC = Primary_Sc]	1.528 (0.756) **	-0.063 (0.632)	-0.165 (0.558)
	[EDUC = Sec_High_Sc]	0 (.)	0 (.)	0 (.)
	AGE	-0.036 (0.032)	-0.023 (0.027)	-0.002 (0.022)
	SONS	0.501 (0.362)	0.076 (0.310)	0.301 (0.283)
	[SALES = Self_Cons]	1.189 (0.857)	2.334 (0.896) ***	-0.194 (0.647)
	[SALES = Sold]	0 (.)	0 (.)	0 (.)
	[MANAGE_SERV = Yes]	1.486 (0.923) *	2.222 (0.920) ***	2.564 (1.159) **
	[MANAGE_SERV = No]	0 (.)	0 (.)	0 (.)
	ECON_VALUE	0.728 (0.409) *	-0.102 (0.344)	-0.226 (0.305)
	SENT_VALUE	0.632 (0.445)	0.152 (0.415)	0.164 (0.347)
[LANDSLIDE = Yes]		1.494 (0.643) **		
[LANDSLIDE = No]		0 (.)		
Willingness to provide the service without any payment	INTERCEPT	-4.217 (2.143) **	-1.871 (2.133)	-7.230 (3.922) *
	[F_TYPE = Coniferous]	0.536 (0.623)	-1.242 (0.657) *	-2.560 (1.220) **
	[F_TYPE = Other]	0 (.)	0 (.)	0 (.)
	OWN_AGE	0.011 (0.006) *	-0.004 (0.006)	-0.016 (0.009) *
	[EDUC = Primary_Sc]	1.148 (0.638) *	1.238 (0.621) **	-1.006 (0.912)
	[EDUC = Sec_High_Sc]	0 (.)	0 (.)	0 (.)
	AGE	-0.032 (0.027)	0.013 (0.029)	0.093 (0.051) *
	SONS	0.517 (0.298) *	0.193 (0.284)	0.015 (0.424)
	[SALES = Self_Cons]	1.269 (0.710) *	-0.281 (0.779)	-0.191 (1.086)
	[SALES = Sold]	0 (.)	0 (.)	0 (.)
	[MANAGE_SERV = Yes]	1.629 (0.740) **	1.535 (0.758) **	1.653 (1.157)
	[MANAGE_SERV = No]	0 (.)	0 (.)	0 (.)
	ECON_VALUE	-0.215 (0.388)	-0.080 (0.353)	0.273 (0.498)
	SENT_VALUE	0.770 (0.369) **	-0.132 (0.409)	0.166 (0.561)
[LANDSLIDE = Yes]		1.881 (0.632) ***		
[LANDSLIDE = No]		0 (.)		
Log L	178.292	175.688	142.853	
p	0.002	0.000	0.000	
N	106	105	106	
McFadden pseudo R <sup>2</sup>	0.185	0.236	0.256	
Percentage of correctly classified cases	67.0	64.8	68.9	

<sup>a</sup> \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ . Standard errors in parentheses.

# Understanding and directing small-scale private forest owner behaviour towards climate change adaptation

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**Keywords:** *Small-scale private forest owner, climate change adaptation, choice model, stated preferences*

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## Introduction

The project focused on the human dimensions of climate change and adaptation of small-scale private forest owners in Austria. Climate change may lead to significant economic losses, but may also entail potential future opportunities. In Austria approximately 95 000 forest owners manage roughly 56% of the Austrian forest area with individual properties smaller than 5 ha. Past research focused on larger-scale owners, while the focus of this study lies on the under-researched group of small-scale private forest owners, also referred to as ‘new forest owners’ (Hogl et al., 2005). Until now, this group is not easily reached by traditional information channels of forestry, as they are not interested in the traditional land use journals or information provided at forest fairs. It is therefore not clear how small-scale private forest owners approach the emerging challenges of climate change and whether or not they are aware of the required activities of sustainable forest management. The goal of the project was to understand small-scale private forest owners’ management decision making and to measure their willingness to implement climate change adaptation strategies. Against this background we tried to identify whether and how their willingness to adapt can be influenced for example by management support or financial incentives.

## Material and Methods

The project was conducted in five steps (Figure 1). First, suitable test provinces were selected based on future climate change impact. Styria and Tyrol were chosen due to the regions’ significant changes in forest management strategies and with differences in expected impact of climate change. Second, interviews and workshops were held in each region, to identify essential questions for the survey and receive input for relevant elements of the choice experiment. A literature review on small-scale private forest owners provided additional information and supported the development of a tailor-made survey. Third, the survey was designed containing questions concerning forest owner’s perception of climate change, motivation for forest ownership, and various other behaviour-influencing factors, and a discrete choice experiment (DCE). DCEs, a stated preference method, are behavioural models, which recognize that decisions are multifaceted and based on several factors, which need to be considered simultaneously. The DCE in this study aimed to investigate forest owners’ opinions on climate change and their preferences for possible adaptation strategies. The participants were asked to repeatedly select one out of three labelled forest management scenarios (a soft, a strong, and no procedure). In order to select the best-fit alternative, forest owners had to trade-off all attributes of the three hypothetic management strategies simultaneously and take non-existing potential future funding schemes and amounts of deciduous trees into account. The management strategies were divided into a “Current decision”, which included monetary attributes, the management type and the service provider commissioned, and a “Condition in 50 years”, which reflected the long-term consequence of the chosen management procedure (Figure 2). Dividing the scenarios into two sections allowed for the evaluation the influence of long- and short-term

effects on the owners. By choosing a management scenario over another, respondents identify the trade-offs they are willing to make between different attributes within the choice task. DCEs assume that individuals will always select the scenario, which maximizes their utility and their relative satisfaction for a particular alternative, which allows for a use-value analysis of each attribute used in the choice experiment. DCEs are specifically fit for the application in climate change studies, since presently non-existing scenarios (i.e. increased amount of deciduous trees) can be incorporated alongside existing adaptation strategies. Fourth, the results were condensed and projected in a decision support tool (DST). This tool enabled the analysis of diverse policy options based on the results of the DCE and visualizes the impacts of each option. The fifth step concerned dissemination to the chamber and other stakeholders.

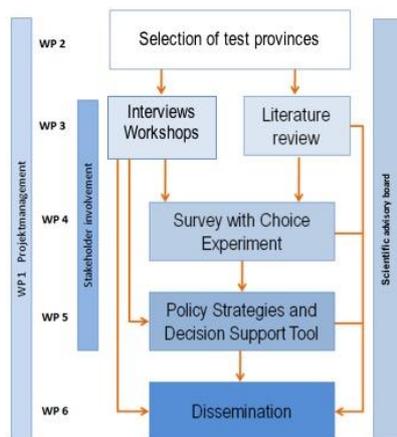


Figure 1.: Example image

	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
Intensity of procedure	Soft procedure predominantly natural regeneration	Strong procedure predominantly regeneration through planting	No procedure
Balance after procedure	900 €	1,000 €	---
Funding	5,000 €	5,000 €	---
Type of procedure	Tractor	Tractor	---
Commissioned by	Regional or local forest enterprise	Regional or local forest enterprise	---
Probability of climate change induced damages	Very low	Low	High
Potential change in value (estimate baseline 40,000 €)	0%	0%	0%
Amount of deciduous trees	20% deciduous trees	40% deciduous trees	3% deciduous trees
<b>I choose</b> →	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 2.: Example of choice experiment

## Results

A total of 919 small-scale private forest owners participated in the questionnaire. The contact information was provided by six different sources and contained respondents from all over Austria. The national results were compared with two test provinces (Styria and Tyrol). The provinces deviated only slightly from the overall sample, indicating, that the sample was captured in a representative manner.

*Forest ownership:* The surveyed respondents owned their forests roughly 13 years and indicated no planned changes in ownership (purchase, lease, or sell forest) within the next five years. The majority possess between 0.1 and 5 ha. This forest area is on average divided into four separate plots. One third are members of a forest owner association.

*Motives for forest ownership:* A “good feeling”, family tradition, and the contribution to the natural landscape were the most important motives. Social aspects were of lesser relevance. Participants differentiated more strictly when rating economic motives, conceiving collecting firewood for personal use, and bequeathing and owning a property of stable value as important.

*Forest tending and maintenance:* Most participants have conducted forestry work, mostly by themselves, in the past five years. Forest owners not maintaining their forest stated a lack of necessity, time constraints, and lack of consultation as driving factors. The majority of forest owners is interested in stable mixed-species stands that are carefully tended.

*Perception of climate change and adaptation strategies:* More than half of the participants already perceive effects of climate change and expect some effect on their forests. Over 52% believe that adaptation measures will become necessary in the next 20 years, but not immediately. Small-scale private forest owners are currently not interested in extended forest insurance, although over two thirds already experienced biotic and abiotic damages.

*Types of forest owners and options for targeted management policies:* The analyses of the DCE revealed three distinct segments of forest owners; (CL1) utility-oriented, (CL2) recreation oriented, and (CL3) tradition-conscious forest owners. The three classes differed significantly in the frequency they visit their forests, the size of the forest property, their residency, education, gender, and their perception of climate change. Also, emotional and economic motives for forest ownership distinguish the classes. The experiment inherently suggested a positive impact of deciduous trees despite their introduction requiring effort and money. Preferred management strategies varied significantly by type of forest owner. The utility-oriented forest owner rejects intensive forest management actions and is sensitive towards harvesting methods and the selected service providers, while the recreation oriented forest owner prefers enhancing broadleaf trees, thus accepting more intensive management actions. The tradition conscious forest owner refuses most interventions and only considers alternatives in case of high financial losses. As 25% of this group does not expect climate change impacts on their forest, they are predicted to never adopt any measures. Financial incentives, as currently applied and discussed, are not relevant for decision making. The willingness to adapt rather depends on details such as future outcome, harvesting methods, and enterprises selected for forest management. Therefore, small-scale private forest owners may become re-interested in forest management as long as they can expect a healthy, diverse forest with high amounts of deciduous trees, which is managed skilfully by local service providers rather than the state forest service. Trying to engage forest owners through funding or other monetary incentives will not succeed, since they seem irrelevant for this specific owner type.

## Discussion

*Forest management:* Small-scale private forest owners are not homogenous. The three evolved classes differ significantly in their overall characteristics, motivations for forest ownership, and in particular in their preferences for forest management. Traditional forest management approaches, and in particular those offered by state-owned institutions, are viewed critically by all owner types alike, making a proper applicability of standardised expert based forest models, build upon growth and use potential, very unlikely. Future management will require the development of innovative tools and a redefinition of appropriate forest management strategies for these owners by relevant institutions. In addition, tailored approaches for contacting these groups will be necessary to re-establish communication channels.

*Climate change:* The majority of forest owners is aware of climate change and either already recognizes its first impacts or expects future consequences. For the non-believers, climate change seems to be a rather abstract threat that cannot be projected onto the individually owned forest. New campaigns, targeting topics such as alternative soft forest management, soft procedures, or challenges of climate change and adaptation for management need to be developed.

*Financial incentives and funding opportunities:* Current forest policy (mostly based on funding schemes) is not able to foster adaptation. As the number of small-scale private forest owners is likely to increase and forest property sizes may decline further, current funding schemes may become even less attractive. The results underline that funding - even if it is increased significantly - will not be a useful tool to steer the overall development. Hence, relevant authorities need to investigate new door openers which are able to engage small-scale private forest owners.

*Future trends of forest ownership:* Today, forest ownership starts much later than in the past. Forests are often treated as possessions that may function as a liability rather than a commodity. Yet, current owners are very unlikely to sell their property and rather bequeath their properties. This administrative structure requires future adaptation to take these altered patterns into account and successfully reach and integrate these forest owners.

*Forest operations:* Technologically advanced forms of forest management are viewed with considerable distrust and the service unit of the Austrian State Forests was clearly rejected. A

strong preference for regional service providers emerged, underlining the importance of these local structures. It will be necessary to enhance the reputation of high technology forest operations and their common work style through image campaigns. In addition, significantly strengthening the highly preferred regional forest providers through new cooperation may not only improve the implementation rate of professional advice but may also lead to the generation of tailor made information tools for individual local structures.

Overall, the likelihood of adaptation depends on several factors such as tree species, harvesting methods, and forest management. Therefore, decision-makers need to understand that forest owners require information about potential impacts and adequate forest management, which ensures a gently managed, healthy, diverse forest with high amounts of deciduous trees. The study clearly shows that funding or other monetary incentives are irrelevant for forest owners with a property smaller than 20 ha.

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# Forest owners' views on storing carbon in their forests

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**Keywords:** Attitudes, Carbon storage, Climate change, Family ownership, Forest management

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## Introduction

Finland is a densely forested country dominated by family ownership and small size of forest holdings. One of the most considerable means to increase carbon sequestration and to mitigate climate change is to increase carbon storages in these forests which would mean refraining from timber harvesting completely, postponing thinnings or final harvests, or enhancing forest growth by fertilizing forest soil in some forest areas. Selection of tree species, variation in replanting and growing density, and the use of selective cutting methods can also be used to increase carbon storages in the forest.

According to the previous studies on forest owners' perceptions on their potential participation in the programs enhancing carbon sequestration in their forests, there are four types of affecting factors: general economic factors such as the underdevelopment of carbon markets and low price of carbon, owner and holding characteristics, objectives of forest ownership and factors related to policy instruments (Ahtikoski et al. 2009, Fletcher et al. 2009, Markowski-Lindsay et al. 2011, Wade and Mosley 2011, Dickinson et al. 2012, Miller et al. 2012, Thompson and Hansen 2012, Urquhart et al. 2012, Rämö et al. 2013, Tian et al. 2015).

The study aims to describe Finnish family forest owners' perceptions on climate change and their opinions on increasing carbon storages in their forests by new kinds of management activities and policy instruments.

## Material and Methods

The data were collected by thematic face-to-face interviews among Helsinki Metropolitan area forest owners (n=15) in 2015. These city-dwellers are expected to represent new kinds of forest owners with more education. However, the forest holdings of these urban owners were spread out through the country and represented different size classes and various landowner objectives which creates variation in the sample. The gender representativeness was considered in picking up the sample. Therefore six female owners and nine male owners were interviewed. The age bracket of the interviewees was wide, from 40 to 83 years, but the level of education was rather high. The holding size varied between 11 and 250 hectares. The tape-recorded data were transcribed word for word, and themes and typologies were created based on the talks of forest owners.

## Results

Forest owners had general knowledge on global climate change taking place in a very long run but did not often connect these changes to their own forests. They also felt that they had only minor possibilities to affect climate change individually. Fertilization was accepted generally as a means to increase carbon storage in the forests. Forest owners could be divided into four types concerning their view on storing carbon in their forests. *Pioneers* utilize their land versatily and have already adopted practices to mitigate climate change by, e.g., selection of tree species or maximizing biomass. *Potentials* emphasizing recreational objectives are concerned about climate change such as more frequent storms. They are willing to take actions to mitigate global warming but this interest has not yet realized into forestry practices. *Deniers* are investors who are mainly

interested in timber incomes but could be interested in increasing carbon storages when sufficiently subsidized. *Indifferent owners* have no specific ownership objectives and their forests have remained unmanaged. Subsidies would be needed in order to encourage them to manage their forests. Table 1 summarizes the main results.

**Table 1.:** Forest owners' views on storing carbon: owner typology.

	<b>Pioneer</b>	<b>Potential</b>	<b>Denier</b>	<b>Indifferent</b>
Owner and holding characteristics	High level of education		Large forest acreage	
Forest ownership: meaning and objectives	Forest functions as a bank but has also recreational function  Multiple objectives  Inherent value of forest ownership	Forest important for recreation but also because of economic security for the future  Recreation and leisure  Inherent value of forest ownership	Forest provides with additional income and is an object of investment  Timber production and sales income	Forest just "exists" and the level of knowledge on own forest and its potential almost non-existent  No specified objectives
Nature conservation	Safeguarding nature conservation combined with other objectives	Positive attitude	No voluntary actions for maintaining nature conservation	No opinion
Views on climate change	Facts on climate change based on e.g. study results	Concerned about climate change and associates it with changed weather conditions	Views on climate change based on media but does not believe that climate change is taking place	Believes that climate change is a fact and is worried about it to some extent but does not see it as a global phenomenon
Climate change and own forest	Climate change affects forest ownership and carbon sequestration taken into account in forest management	Is aware of the role of forests in mitigating climate change but this is not connected to own forest ownership	Does not believe that climate change affects own forest ownership	Does not see any connection between climate change and own forest ownership
Attitude towards potential programs on carbon storing	Very positive  Able to critically assess pros and cons of different alternative means	Wants to follow how the program functions and is interested in the preconditions of participating  Interested in various means and wants to combine carbon sequestration into Best Practice Guidelines for Sustainable Forest Management	Negative attitude due to conflict with other objectives of forest ownership  Fertilization the means to increase carbon storage in own forest	No distinct opinion on participating into a program and no real understanding of its preconditions  Unable to assess the optimal alternative way of increasing carbon storage in own forest
Compensation	Compensation additional benefit for participating in the programs but pure guidance motivates to action	Compensation is important to some extent, but the most important aspect is to allow recreational use	Compensation the most important criterion if considered participating	Compensation the most important criterion although own forest has not created income in years

## Discussion

Forest owners appear to have a positive attitude towards storing carbon in their forests, in principle. Economic factors are important for many owners when they consider their participation in potential carbon sequestration programs. The amount of financial compensation must be carefully analyzed when planning policy programs. For many owners the pecuniary compensation is the primary motivation participate in storing carbon. The absence of value-driven willingness to mitigate climate change makes this instrument vulnerable for changes in the amount of compensation or other mechanisms. Therefore, informational guidance on the role of forests and tailored forest management for reducing carbon emissions along with flexible terms of the agreement should be other key elements in the cost-share programs. In any case, the most challenging forest owner type are *Indifferent owners*.

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# Analysis of the softwood resources evolution in the Walloon private forest (Belgium)

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**Keywords:** *Wallonia, private forest, softwood, overharvesting*

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## Introduction

In Wallonia, forests cover 1/3 of the territory, namely 556 200 ha (Inventaire Permanent des Ressources Forestières de Wallonie, 2016). Private forests account for a little more than half (51%) of this area. Softwood species cover 43% and are more present in private forests (47%) than in public forests (39%). They are predominantly spruce managed in even-aged stands regenerated by clear cuttings.

Private forests have shown clear signs of overharvesting in softwood resources for several years, as well as a slowdown in reforestation after clear cuttings.

Considering the potential economic impact of this overharvesting in softwood resources, forest policy measures become necessary. Nevertheless, they require a preliminary objective analysis to understand the phenomenon, in particular in light of the different types of properties and owners which are mainly concerned.

## Material and Methods

Since 1984, Wallonia has a permanent regional forest inventory based upon a sampling design (Rondeux et al, 2010, Alderweireld et al, 2015). This tool is used to define general guidelines in terms of forest management and forest policy as well as to develop a detailed knowledge of the forest and its evolution. The distinction in properties types is limited to public/private, without e.g. taking the area of the property into account. Moreover, the evolution of the forest cannot be analyzed during a period shorter than 10 years, which corresponds to the period between two inventory cycles.

With a view to analyzing the softwood overharvesting phenomenon in a more detailed and reasoned manner, recent forest fragmentation data have been used for enhancing the information of the regional forest inventory.

Specifically, the following process was used to carry out this analysis:

- Elaboration of an innovative forest fragmentation map based on the cadastral parcel map and a land use map;
- Crossing of this map with regional forest inventory data;
- Disaggregation of data according to the area of the properties in which point samplings are fallen;
- Identification of the most appropriate potential forest policy measures.

## Results

A mapping of the forest fragmentation has been carried out based on cadastral data (anonymous data, reference year 2013) and on the land use map of the National Geographic Institute (Colson

et al 2015). This mapping allowed obtaining up-to-date data on the landholding structure of the private forest ownership in Wallonia. It turns out that the Walloon private forest comprises 89 790 properties, amongst which 91% are smaller than 5 hectares.

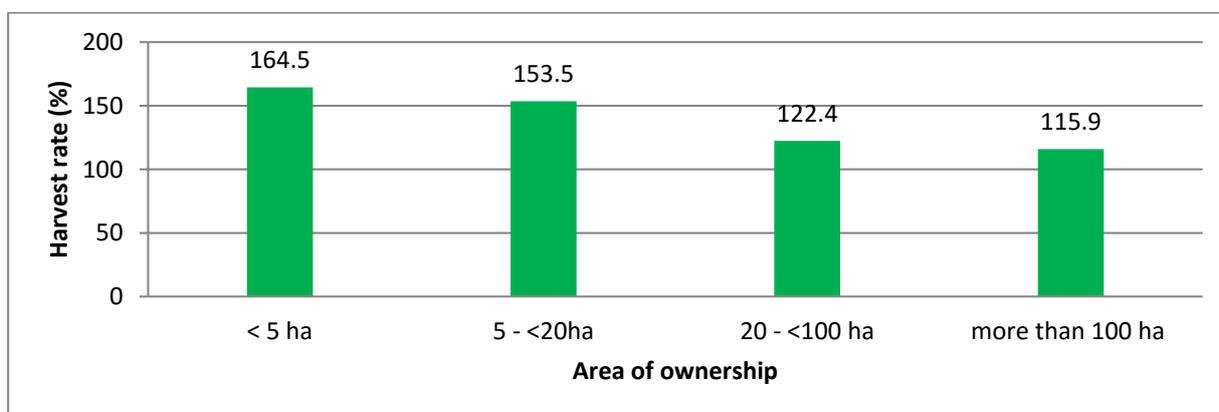
Based on the crossing of mapping and cadastral information on the one hand, and regional forest inventory data on the other hand, a characterization of the forest could be carried out with a distinction in properties according to their area (Lecomte et al, 2016). These are brand new data in Wallonia as the results of the regional forest inventory were aggregated by property type, at least for the private forest.

This new database has been analyzed to attempt an objective estimation of the softwood resources evolution, with a focus on the private forest.

Three indicators have been used to this end:

- Harvest rate of wood resources (harvested volume in proportion to increment), which indirectly translates the current behavior of owners in terms of wood mobilization;
- The proportion of clear cuttings, distinguishing newer and older ones (> 3 years), the latter could be seen, in terms of owner behavior, as a non-reforestation;
- The previous land use, which can explain the more or less old origin of the wood production speculation and therefore also the profile of the owner.

Regarding harvesting (compared to increment and including clear cuttings in harvesting), the analysis at local level shows a rate of 135% for softwood. It drops to 115% in public forests, but reaches 152% in private forests (Inventaire Permanent des Ressources Forestières de Wallonie, 2016). When referring to cadastral data, the harvest rate in private forests should be put in perspective (see figure 1). The analysis clearly shows a more marked overharvesting in small private forests, while the rate observed in properties over 100 ha is closer to that of public forests (Lecomte et al, 2016).



**Figure 1.:** Harvest rate (%) of softwood resources in the Walloon private forest, by class of ownership area (ha)

The analysis of the proportion of clear cuttings was carried out with a distinction being made between recent cuttings (less than 4 years) and older cuttings, which can often translate into non-reforestation. In both cases, clear cuttings were the most present in properties smaller than 5 ha.

Finally, the analysis of the evolution of forest with regard to agriculture (figure 2) shows that the proportion of softwood stands planted after an agricultural use of land amounts to around 30% in properties smaller than 5 ha and decreases sharply as the area of the properties increases.

## Discussion

The analysis carried out thanks to this unprecedented crossing between the regional forest inventory and cadastral data makes it possible to show that the overharvesting of softwood resources in the Walloon private forest is very present and is more affecting small forest properties. Close to 1/3 of these small softwood properties are young forests originating from

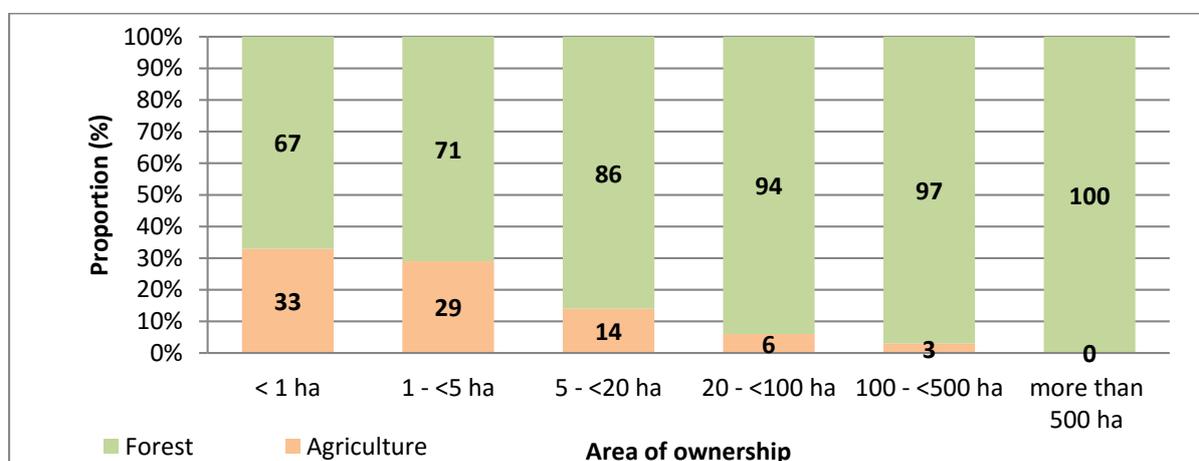
reforestation of agricultural lands. Large surfaces were indeed replanted with softwood in the 50's and 60's following the closing down of small farms.

**Table 1.:** Recent and older clear cuttings according to the area of the properties

Area classes (ha)	Recent clear cuttings (less than 4 years)		Older clear cuttings (at least 4 years)	
	% (1)	% (2)	% (1)	% (2)
< 1 ha	4.6	9.9	6.6	10.4
1 - < 5 ha	4.4	22.5	6.9	26.0
5 - < 20 ha	3.9	23.9	4.4	19.8
20 - < 100 ha	1.8	18.3	3.2	24.0
100 - < 500 ha	2.8	23.9	1.7	10.4
More than 500 ha	0.9	1.4	8.2	9.4
Total	3.0	100.0	4.0	100.0

% 1 = % of the clear cutting area compared to the total area of that class,

% 2 = % distribution of the total area of clear cuttings in the different classes



**Figure 2.:** Previous land use (forest or agricultural land) of softwood stands in Private forest, by class of area ownership

It is important that the renewal of these forest areas is promoted and supported by policy measures which are adapted to this profile of owners, who do not necessarily have technical knowledge: awareness campaigns to avoid premature cuttings, promotion of reforestation and creation of resilient stand (climate change). New business models in line with the objectives of those descendants of farmers and with the regional forest policy have to be developed.

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Parallel session 9: Researching gender: an interactive session

## Talking and writing about gender - A dialogue-based session on new forest owners in Europe

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**Keywords:** *dialogue, gender perspective, research paper, policy brief*

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From the work carried out by FACESMAP (Cost Action FP1201), sub-group “Gender in European forest ownership and management”, it can be stated that there is an apparent non-visibility of female forest owners in statistics and research. Further, the lack of gender disaggregated data and gender perspective in research hampers our understanding of what it is to be a traditional or a new forest owner, and what the implications may be to forestry as a business and to society at large. In search for better understanding of new forest owners we argue that not only better data is needed, but also a more reflective notion of what knowledge we have on gender in forestry and how it can be interpreted. To this end we invite fellow researchers and practitioners to a dialog based session on the topic: *Does gender matter in forest ownership*. Session participants are asked to bring with them evidence on (I) when gender matters, how gender matters and to whom gender matters. We also ask for evidence on situations (II) when gender does not matter, how it doesn't matter and for whom it doesn't matter. After a short introductory talk by the sub-group leaders, each participant will be given a few minutes to present their evidence, to be followed by a discussion. This dialogue will be brought further to research community and policy-makers through a research paper and a policy brief, to which all active session participants are invited to co-author.

## Do female forest owners think and act “greener”?

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**Keywords:** *ecofeminism, forest management, gender, private forest owners, Sweden*

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### Introduction

Research in some Nordic countries shows differences in male and female forest owners' harvesting and silvicultural activities where significantly lower activity is reported on forestland owned by women compared to men (see e.g. Follo 2008, Lidestav & Ekström 2000, Lidestav & Berg Lejon 2013, Kuuluvainen et al 2014, Rippati 1999). This can partly be explained by the fact that the transaction pattern of forest properties differs between women and men (Lidestav 2010), which possibly provides less incentives for women to harvest. However, if applying assumptions that underlie ecofeminist theories it could also be interpreted as female forest owners think differently than male forest owners. Ecofeminist notions and empirical studies of female forest owners' attitudes and behaviour suggest that women are more environmental concerned and less profit oriented than male forest owners (see e.g. Follo 2008, Kronlid 2003, Plumwood 1992).

By focusing on (1) land ownership and management, and (2) female and male forest owners' attitudes towards different forest values, productivity and what the forest should be used for, this article takes a social ecofeminist approach adapted to the conditions of female Swedish forest owners as a framework for the analysis of different sets of data. Doing so, we examine male and female forest owners' harvesting and silvicultural activities, their business activities connected with the forest, and their statements of what they value most about their forest holdings.

Given the women's position in the production of raw material for industrial use linked with the ecofeminist notion of women being closer to nature and less exploitive of it than men, we hypothesise that Swedish female forest owners are more inclined to appropriate other forest values than industrial roundwood or other commercially viable products while having a less exploiting attitude towards the forest. Thus, the aim of this paper is to investigate whether female forest owners in Sweden are inclined to appropriate other forest related products or services than industrial roundwood to a higher extent than male owners and if they are more focused than men on preservation of the forest. Thus, this question embodies the issue of whether women “think greener” than men, in the sense of ecological and social issues, concerning what the forest should be used for and which concerns there are to be taken in forest management and use.

### Material and Methods

Two sets of survey data were used to explore attitudes, silvicultural activities and business activities connected with the forest land. (1) A postal questionnaire survey on forest management and attitudes towards the forest as a resource that was designed in cooperation with Umeå University and administrated (sampling, data collection and data quality control) by the Inquiry Unit at Statistics Sweden (SCB) was used to provide information on forest management and attitudes towards the forest as a resource. (2) Data from an earlier study by Umaerus et al (2013) was used to examine whether gender has an impact on activities based on the family forest farm.

### Results

The results indicate differences between female and male forest owners' silvicultural activities as well as between their inclination of deriving either industrial roundwood or other forest related

values. While both gender were almost equally interested in timber production, the female owners were to a higher extent than male owners also interested in ecological, recreational or social values (Table 1). The female owners were also more inclined to see business opportunities in less traditional forest activities in fields as tourism and health/rehabilitation.

**Table 1.:** The value of forest as a resource in general; forest owner's valuation of the importance of various objectives (from 1 = not important at all to 7 = very important). The numbers show the percentage of respondents who have answered 5, 6 or 7. Difference ( $\Delta$ ) and statistical significance is calculated between row pairs. Differences of statistical significance on a 5 % level (Pearson Chi-Square test) are marked with the letter a.

Objective P = production value E = ecological value O = other value (cultural/recreational)	Total n = 970	Gender		$\Delta$
		Man n = 724	Woman n = 221	
P: Increased timber production	73	76	65	10a
P: Increased bio fuel production	69	70	67	3a
E: Preservation of native forests	54	52	62	-9a
E: Preservation of plants and animals	74	72	81	-10a
O: Preservation of cultural environments	56	53	68	-16a
O: Increased areas for recreation	29	27	37	-10
O: Increased tourism in the forest landscape	24	23	28	-6
O: Increased possibilities for hunting/fishing	45	46	40	6

## Discussion

The differences between male and female owners regarding production values and ecological values, and to some extent cultural values, were significant. It could be seen as an indicator that women really do “think greener” than men, i.e. that they more highly than men value other benefits than traditional timber production and that there could be a gap between men and women when it comes to specific choices on how to manage forest land. Since the gap between men and women in average were smaller regarding production values as opposed to ecological and cultural values, an alternative interpretation could be that women are closer to traditional male-biased production values than men are to alternative, and non-traditional forest resource values. That could indicate that the practical management of forest properties owned by women to a greater extent is based on a combination of the two perspectives, i.e. production values and other values, than is the case in forest properties managed by men. This study, which did not report significant differences between male and female owners' level of activity regarding forestry activities (final felling, thinning and cleaning), did not include any survey question that could have revealed a difference in how the forestry activities were planned and executed, i.e. what considerations to ecological values, such as nature conservation, that were actually made. However, the significant differences between female and male owners in the valuation of the profitability of the forest property and ecological values (biodiversity and landscape conservation), indicates that female owners would be more willing than male owners to sacrifice profit for the benefit of ecological values.

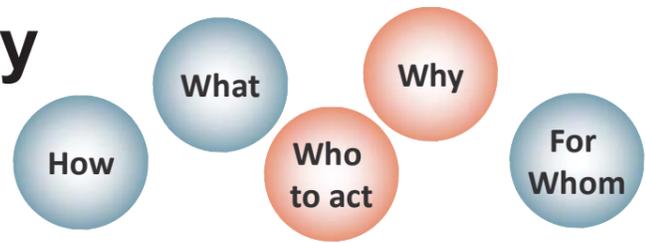
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Posters

# Application of expanded business model canvas in forestry



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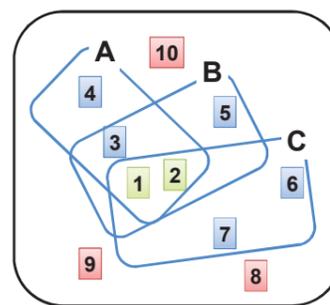
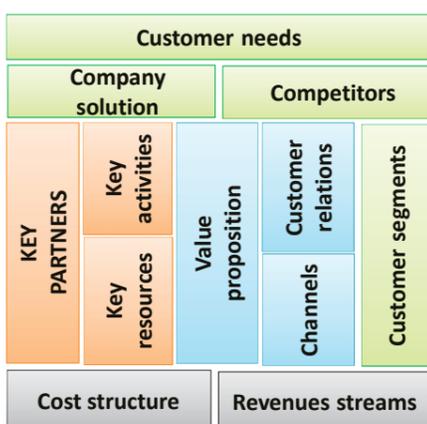
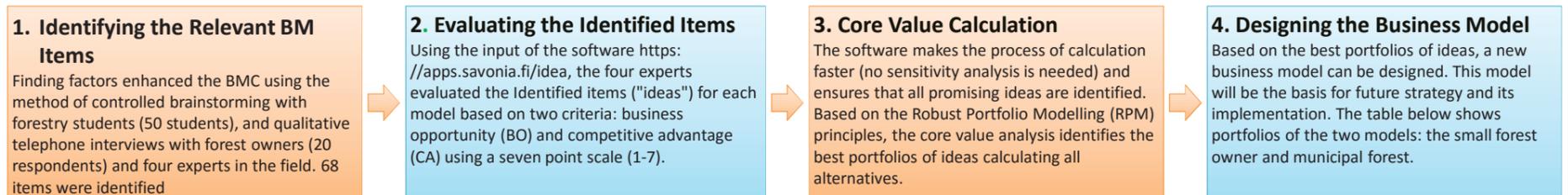
Effective (and innovative) business strategy is hard work, like juggling many balls in the air.

Innovation itself isn't confined to the development and commercialization of new products. It can also build upon creative new practices, processes, relationships, communication and distribution channels, etc. Invention can occur in all these domains of the Business Model CANVAS (BMC) extended by Savonia University

## C I M O Analysis - the Czech Republic



## Extended Business Model Canvas - Design Phases



**Research Questions**  
 What is the **applicability** of the Expanded Business Model Canvas (EBMC) for the creation of effective (and innovative) business strategies for forest owners in the Czech Republic?  
 Are there **differences** in the identified business models for different types of forest owners?

Main business areas	Small Forest Owner	Municipal Forests
<b>I. Customer and competition:</b> Customer segments customer needs Company solution	Residents living near the local forest property Cheaper raw material directly from the source Flexibility and speed of delivery Self-production of firewood	Saw mills and other woodworking enterprises General public Cheaper raw material directly from the source Forest cultivation
<b>II. Offering:</b> value proposition delivery channels customer relationships	Reliable and honest member of the community Wood at the place of delivery Cheap firewood Personal communication Providers of forest services Good long term relations with licensed forest manager	Healthy and beautiful forests Reliable and honest member of the community Recreation and tourism Wood at the place of delivery Participation in environment and educational projects (forest pedagogy)
<b>III. Resources:</b> Key resources key partners key activities	Basic knowledge and willingness to learn Forest management Institute (FMI) Cooperation with selected local forest owners Specialized companies or skilled tradesmen	Means of transport, tools and machinery Effective planning and organization of forest production Maintaining and increasing the expertise of the forestry staff Repair and maintenance of forest roads, educational trails Innovation in forest management
<b>IV. Profit formula:</b> Cost structure Revenues streams	Fixed costs Variable costs	Income from the sale of wood Social and environmental benefits

**Business Models Differences**  
 A comparative table shows the differences in the core ideas of these two business models.  
 For a small owner, the careful study of the size and cost structure, building good relationships and position as a reliable and honest member of the community are necessary. And he or she should make a choice:  
 A) Association and cooperation with other forest owners  
 B) Under his or her own power: the need for concentration on the customer segment of residents living near the forest property, the need for long-term term cooperation with a licensed forest manager, self-education in the context of forest management, improve the communication and concentration on local residents, etc. Depending on this decision, the strategy can be further developed.  
 For municipal forests, two customer segments are stressed: wood processing companies and the public which require higher understanding of multifunctional forest management and innovative approaches. Recommended activities include the development of recreational services and educational projects, etc. In the case of profit formula, outside market benefits are highlighted.

**Concluding Remarks**  
 The design and build of a business model is the appropriate basis for writing a business plan, as well as to formulate an overall strategy, and also to create a platform for changing the existing model. It was demonstrated that the applicability of business models in forestry creates a platform for the systematic thinking about the business in a complex environment, the development of innovation and crossing traditional stereotypes. Different results, depending on type of ownership, were obtained. A more **detailed segmentation** of owners would be suitable for further use in practice: the size of the forest area, the distance to the forest from the place where they live, etc.



# What does mean Natura 2000 payments for private forest owners in east EU?

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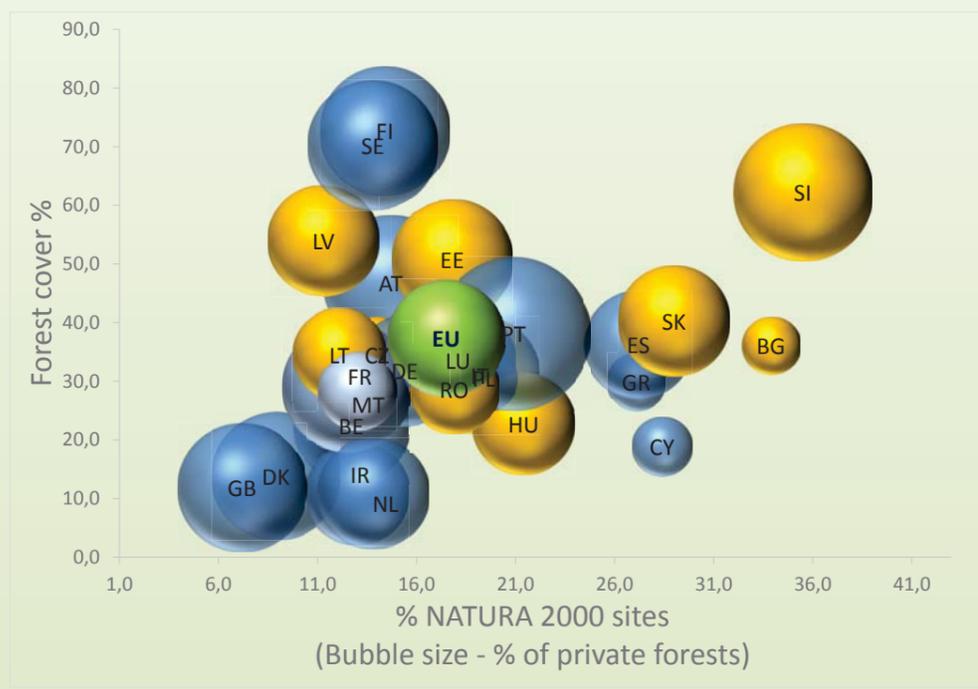
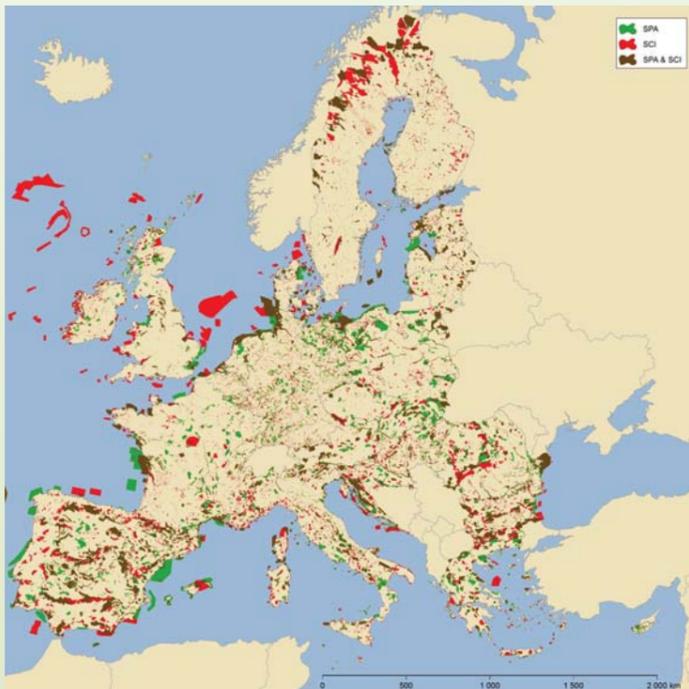
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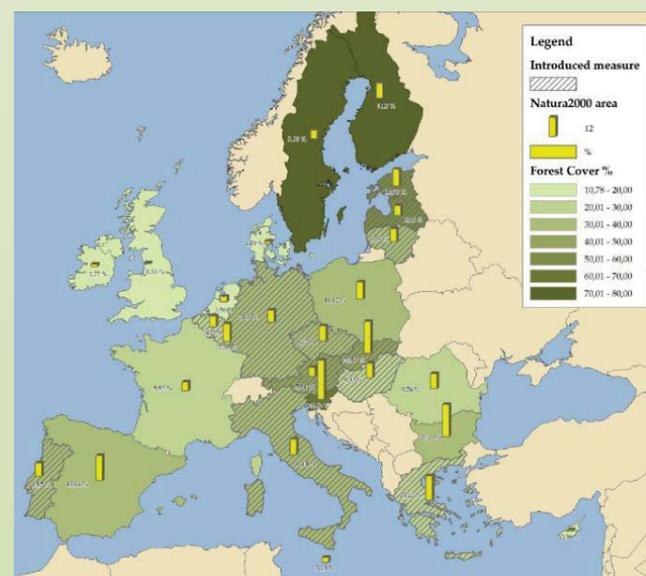
**NATURA 2000 network currently cover about 18% of EU territory and forest habitats and species are there included significantly.**



EU Member States implement the NATURA 2000 directives through different concepts of nature protection. **Constrains and obligations are related to approximately 60 000 private owners and 400 000 hectares of NATURA 2000 forest areas.**

The attitudes of private forest owners have changed regarding traditional forestry practices. With the implementation of NATURA 2000 directives they have to follow common requirements:

- *increase amount of dead wood*
- *use constrained tree species for regeneration*
- *decrease area of clearcutting*
- *limit silvicultural activity*
- *protect wetlands*
- *protect nest trees*



**RDP 2007-2013 measure 224: NATURA 2000 payments in forests** – provides land based annual payment to compensate private forest owners for the disadvantages related to NATURA 2000 areas.

Member state	Planned (ha)	Planned number of beneficiaries	Planned expenditure (EUR)	Paid expenditure* (EUR)	Fulfilment of targets - % of planned expenditure
Czech Republic	37 000	450	375 000	218 823	58.3
Estonia	61 300	5 000	20 351 000	18 407 749	90.4
Hungary	145 000	5 000	27 508 000	24 748 476	89.9
Latvia	27 000	1 700	8 340 000	9 046 656	108.4
Lithuania	85 000	18 000	2 318 000	3 099 774	133.7
Slovakia	30 000	150	4 222 000	4 312 984	102.1
<b>EU</b>	<b>506 529</b>	<b>46 339</b>	<b>76 635 180</b>	<b>64 251 788</b>	<b>83.8</b>

\*Total expenditure till III. Q 2014 Source: DG Agri

**NATURA 2000 payments in east EU countries are increasing the competitiveness of the forest sector and support for environmental sustainability. The compensation helps to accept the restrictions of NATURA 2000 directives.**



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# CARBON FORESTRY AS SOCIAL INNOVATION FOR WELL-BEING OF EUROPEAN MOUNTAIN REGIONS



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**European mountain landscape** faces unique *global change challenges* but also offers *opportunities* for sustainable development. The specific role of mountain ecosystems in climate change regulation arises from their **capacity to capture significant amount of carbon in vegetation and soil organic matter in the long term**. However the importance of European mountain ecosystems to provide carbon sequestration has been *overlooked* long time but the need to *reverse their degradation* has already been noted within the broader debate about climate change. Nowadays **mountain sustainable development is top policy agenda**.



## CARBON FORESTRY

As the link between changing climatic conditions and elevated atmospheric carbon dioxide concentrations becomes increasingly clear (IPCC, 2007) and a *crucial role of forests* in the terrestrial *carbon cycle and climate change mitigation* efforts is recognized, the need to find **new integrative forest management approaches** towards sustainability is evident (Alig & Bair, 2006; Canadell & Raupach, 2008; Ray et al. 2009). Potential **technological innovative approach** reflecting carbon storage and sustainable use of forests could be **carbon forestry** representing a type of forest management focusing on a **long-term increase of forest stands' carbon storage**. The carbon forestry includes two basic principles - *minimizing carbon losses and maximizing carbon gains* in the whole *forest cycle, from soil preparation, planting management, thinning to harvesting* (Marek et al., 2011).

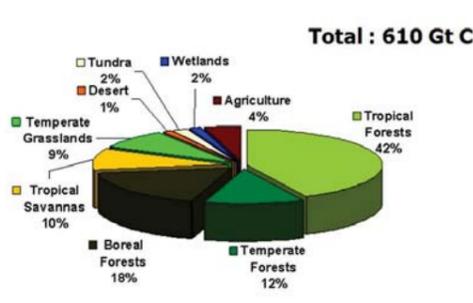
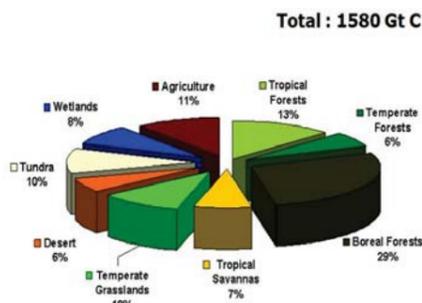


Figure 1: World carbon stocks in soil organic matter  
Source: Schlessinger, 1999

Figure 2: World carbon stocks in terrestrial vegetation

Not only the type of forest management approaches but also the resource and governance regime is considered as a crucial for sustainable forestry (Agrawal et al. 2014; Nijnik & Bizikova 2008). Self-organized **robust and optimal common pool resource regime (CPR regime, commons)** characterized by high organizational culture (Ostrom, 1990, 2005, 2008, 2010) and adaptation to natural and social disturbance (Berkes, Folke, 1998) is seen as **a perspective ecosystem service governance regime** to address social dilemmas in which short-term interests of individuals are in conflict with long-term interests of society. In particular, local users in collective self-organised regimes are capable of crafting own rules that allow for the sustainable and equitable management of forest social – ecological systems.



## Methods and results

Qualitative assessment of management practices by forest experts in terms of carbon uptake and calculation of carbon sequestration potential (Magnani et al. 2007) were conducted.

Table 1 confirms our arguments that self-managed and self-governed forests are comparable / more effective in the increase of carbon sequestration with other management forest regimes (state, private).

Table 1: Forest management practices in selected case areas according to the intensity of use

0-20% (very low), 21-40% (low), 41-60% (high), 60-100% (very high)

MANAGEMENT PRACTICES	Carbon losses ↓ Carbon gains	CASE AREAS							
		Bulgaria		Scotland		Slovakia		Slovenia	
		state regime	private regime	private regime	new forest commons	state regime	traditional forest commons	state regime	traditional forest commons
1. site preparation	burning	Low	Low	low	very low	very low	very low	very low	very low
	planting seedlings in a regular way (digging hole and planting bought seedling)	very high	very high	high	high	very high	very high	very high	very high
	soil preparation for seeds (natural regeneration - digging holes before winter to make good conditions for seeds germinating )	very low	Low	very low	very low	very low	low	very low	low
2. planting management	weeding after 1-2 years, mowing weeds - biomass from weeds is taken away	very low	Low	very low	very low	very low	very low	very high	very high
	weeding after 1-2 years, mowing weeds - biomass from weeds stay on soil	very low	Low	very low	high	very high	very high	very low	very low
3. thinning	selected cutting	very high	very high	low	high	very high	very high	very high	very high
4. harvesting	clearcuts without left organic matter	very low	very low	very low	very low	very low	very low	very low	very low
	clearcuts with left organic matter	very low	very low	high	high	low	very low	very low	very low
	strips/squatters/cycles (specify) of trees harvested	High	High	very low	very low	high	high	very low	very low
	selected cutting – harvesting	very high	very high	low	high	low	very low	very high	very high
5. timber skidding	untouched area	high	high	high	very low	very low	low	very low	low
	cable yarding	Low	Low	very low	very low	low	high	low	low
	horses	very high	very high	very low	very low	very low	low	very low	very low
	tractors	High	High	high	high	high	high	very high	very high
	harvestors	very low	very low	very low	high	low	very low	low	low

Table 2. Carbon sequestration potential in selected SES (tC/ha/year)

Case areas	Bulgaria		Scotland		Slovakia		Slovenia	
	state regime	private regime	private regime	new forest commons	state regime	traditional forest commons	state regime	traditional forest commons
Total area (ha)	741.8	103,989	138,106.56	675	5,410	3,831.7	4,835	2,508
Carbon capture (tC/ha/year)	5.74	7.42	3.31	4.78	7.98	7.88	5.11	7.69

Carbon sequestration potential measured in the eight forests in our study varies between 3.31 to 7.98 tC/ per hectare and year. The results in Table 2 confirm our initial assumption that carbon sequestration potential is in addition to ecosystem type affected by forest management regime type. As seen in table 2, commons or private forest regimes have higher potential than the state regime in each country (except Slovak state regime). Furthermore, as alternative practices such as natural planting processes are introduced by several forest commons, the expected potential is considerable greater.

**CONCLUSION: Results confirm perspective of forest commons in European mountain regions as governance regime to implement the carbon forestry as innovative and vital economic model** not only to enhance long-run carbon storage and thus contribute to climate crisis mitigation, but also to increase well-being of local communities living in mountain regions.



COST is supported by the EU Framework Programme Horizon 2020



Research is a part of PhD research, non-published data yet

# Forest management patterns in Romania small scale forestry: an application of **DPSIR** model

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<sup>1</sup>University "Ștefan cel Mare" of Suceava, Faculty of Forestry, Romania

## OBJECTIVES

To analyze forest policy responses in relation of changing management patterns in small scale private forestry by comparing, categorize and quantify the structural conditions and the economic and ecologic effects

- Forestry Code (1998 & 2008) made no differences in term of private forest management: lack of an adapted policy tools to the reality of private forestry
- Increase public awareness on deforestation which puts more social pressure on reducing the command and control instruments
- Umbrella associations of private forests are more active but lobby capacity is affected by the pressure from civil society



Indicators	Alternative 1: Respecting the provisions of the FMP (1991-2004)	Alternative 2: harvesting the annual increment (1991-2004)	Alternative 3: volume harvested in practice between 1991-2004	Economic loss (USD/ha)
Total harvested volume (m <sup>3</sup> )	14.152	78.966	193.178	11.000
Annual average volume harvested (m <sup>3</sup> /year/ha)	1,3	5,6	80	
Intensity compared with the standing volume in 1990 (%)	4,3	23,0	58,0	
Differences compare with legal provisions 1991-2004 (m <sup>3</sup> )	0	64.814	179.026	
Market value 1994 (USD/m <sup>3</sup> )	5			45
Total benefit 1994(USD)	895.130			11.266.872
Net present value (2014) (K =5%, t=20 years)		2.375.046		

**ECONOMIC**  
 Net present value (NPV) in different management alternatives  
 (Scriban et al, 2016)



**ECOLOGIC**  
 The effectiveness of ecoprotective functions index  
 (Barbu et al, 2015)

- 29 % optimal
- 39 % satisfactory
- 32 % unsatisfactory



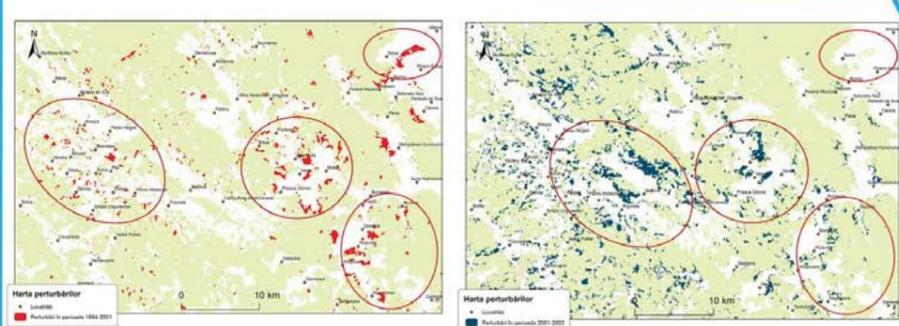
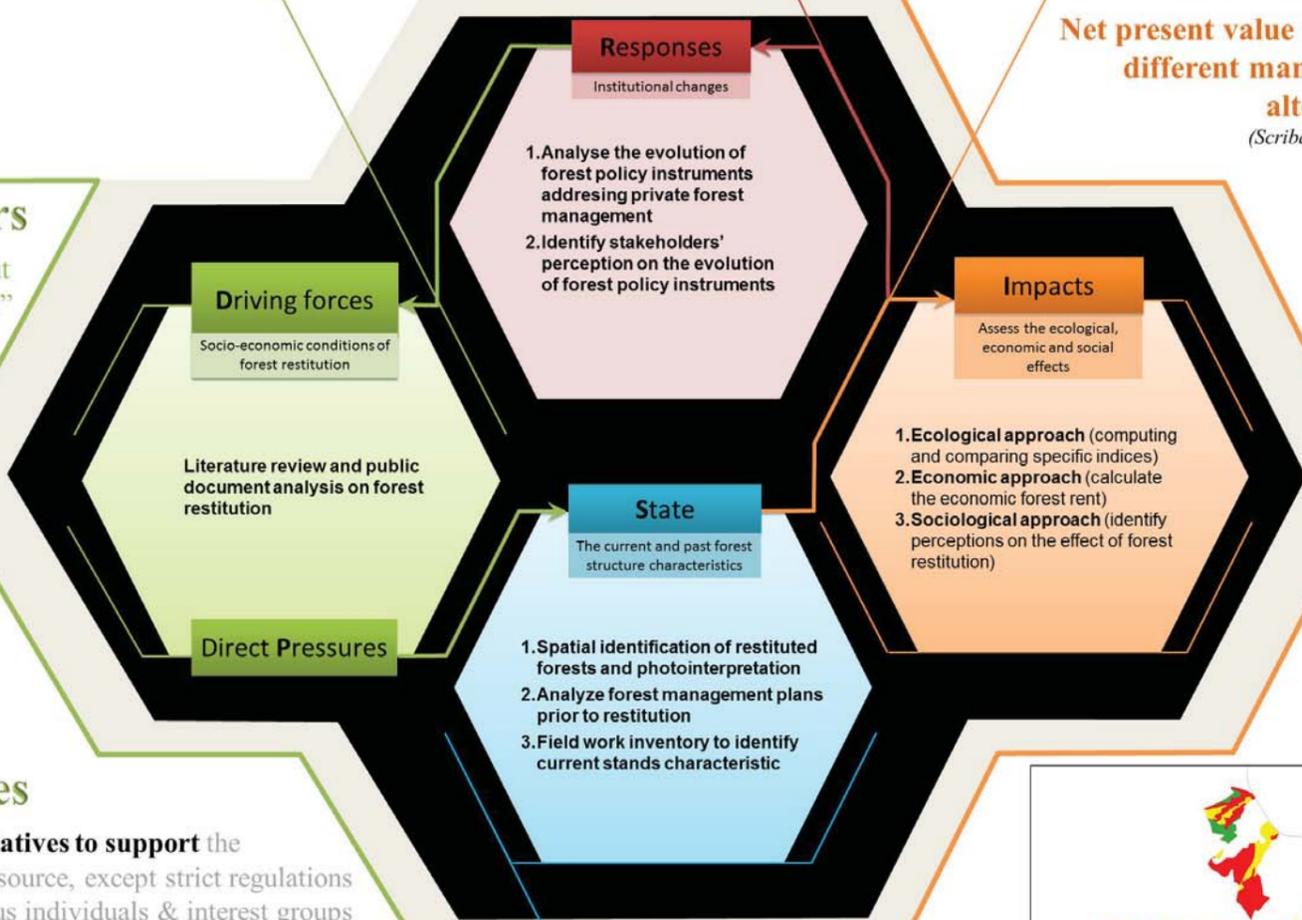
### Political drivers

"confusing" and "without vision laws of restitution"

- 1st Law/1991 - Turmoil of clustering political identities
- 2nd Law /2000 - the promise of the right coalition for integral land restitution
- 3rd Law/2005 - full restoration of private lands

### Social pressures

- NO policy actions/initiatives to support the sustainable use of the resource, except strict regulations
- competition betw. various individuals & interest groups
- Immediate economic benefits instead of long term use



### Evolution of disturbances in private forests

Type of ownership	Total forest land evaluated (ha)	Degree of disturbances (% from the total area)					
		1989-1994	1994-2001	2001-2002	2002-2007	2007-2011	2011-2014
Public forests	54959	1%	2%	7%	2%	1%	2%
Private forests restituted by the law 18/1991	2502	2%	44%	19%	2%	0%	0%
Private forests restituted by the law 1/2000	14429				5%	3%	3%
Disputed forestlands	350	3%	49%	6%	3%	0%	0%



### Evolution of forest vegetation

Region	Total inventoried area (ha)	Stand phases in small scale private forests in Romania (% total forest inventoried area)			
		TEPR <sup>1</sup>	TRAR <sup>2</sup>	REG <sup>3</sup>	BLANK <sup>4</sup>
Vama	205,84	28 %	80,24 %	40,36 %	68,58 %
Solca	1654,21	60,94 %	80,82 %	39,75 %	62,43 %

<sup>1</sup>Trees existing prior to restitution, <sup>2</sup>Trees regenerated after restitution period, <sup>3</sup>The presence of recent regeneration, <sup>4</sup>Disturbed areas or without forest vegetation

**ABSTRACT:** Ecological classification of Greek land has a long history, starting with the Greek scholars, Aristotle and Theophrastus during the third century B.C. Greece, is situated in south-eastern Europe and it is endowed with splendid scenery, historical and archaeological interest.

Greek Forest Service (GFS) is responsible for providing information on legislative issues, rights and obligations regarding forests. GFS informs private owners of all regulations and measures available for improving the status of their estate and collaborates in creating the necessary plans for the application which is to be undertaken.

Under the FP1201 FACEMAP cost action it is made the first attempt to collect all the data for the forest ownership status in Greece. Three major categories were created; public forests, non public forests and private forests.

In this poster it is presented the forest ownership situation in the 7 municipalities of Central Macedonia Prefecture.

## INTRODUCTION

The distribution of Greek forests by the ownership structure is the result of historical, social, economic and political conditions. The political culture of Greece is characterized by an instrumental rationalist decision making process where the public authority is the only entity responsible for making choices in favor of the “common good”. This dominant political framework applies in forestry whereby the common interest is defined in an extra-societal way without considering the interests and needs of different users. Within the forestry department, national forest policy is made at a central level by a close circle of well-intentioned forestry specialists. The high percentage of state forests 65.6% is considered as favorable, because it best serves the social role of forests. Greece is a mountainous country and the more mountainous is a country the higher should be the percentage of forests under state management, since the state with the funds, personnel and framework it has at its disposal, proves to be a better manager than private forest owners. Of course this is not happening the last 2-3 years. Consequently, in mountainous countries the protective and social role of forests is better promoted.

Forests are not classified by ownership size in the 1992 First National Forest Inventory (NFI). The areas of the 1992 inventory are not classified by ownership size.

Nowadays, the majority of the relevant data about forests comes from the results of the NFI (Ministry of Agriculture, 1992). The First NFI in Greece was initiated in 1963 and covered 11,377,000 ha or 86.2% of the entire country (National Inventory of Greece 1992). Areas not covered by inventory were primarily agricultural lands which amounted to 1,819,000 ha or 13.8% of the country area. This inventory was conducted as a joint project between the Hellenic Forest Service and the Food and Agriculture Organization of the United Nations (FAO).

## FOREST OWNERSHIP TYPES

Public forests belongs to the central state and is managed by the Forest Service. The non public forests are owned by many organizations such as municipalities, monasteries and charitable foundations. The private forests belongs to cooperatives in various ways, as natural or legal persons. They are distinguished into two categories.

- Joint forest property by state and other natural or legal persons
- Joint forest property by natural or legal persons.

All non-state forests are subject to state forest policy and works carried out in them are under state control and supervision.

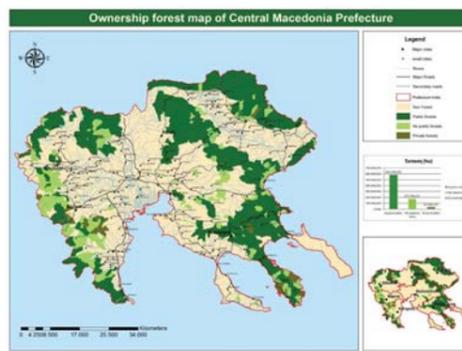
Eventually the individuals are also private owners, or people or private companies.

## METHODOLOGY

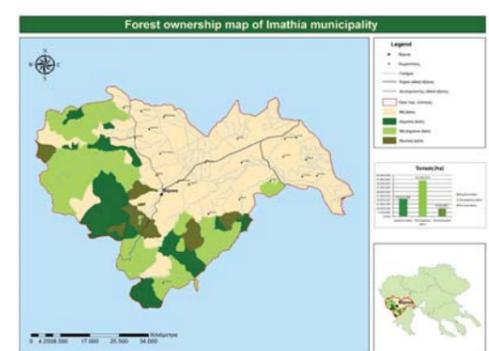
The forest ownership maps of the municipalities of Central Macedonia prefecture were obtained in analog form, from the General Department of Forestry and Rural Affairs of decentralized Administration of Macedonia. The map scale was 1:20.000 and the categories of the maps were based on the reports of the Forest Departments. With the use of GIS software the maps were digitized and a database was created according to the ownership categories. The hydrographic and traffic network were added and the locations of the big cities. In this way the first digital ownership maps of Central Macedonia were created. The statistics for all the areas by ownership categories were exported, as it is presented in the following chart.

Geographical areas (Prefecture)	State forests (ha)	Municipalities forests (ha)	Monasteries forests (ha)	Organisations forests (ha)	Cooperatives forests (ha)	Individuals forests (ha)	Total forests (ha)
Macedonia	518,624	76,855	56,838	2,217	61,961	32,615	749,110

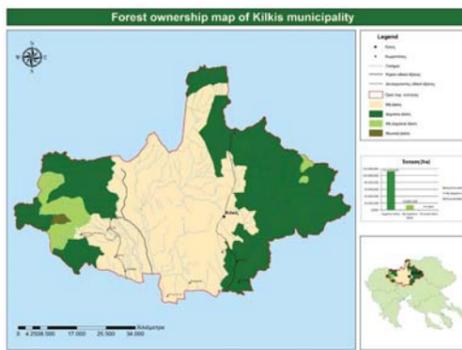
## FOREST OWNERSHIP MAPS



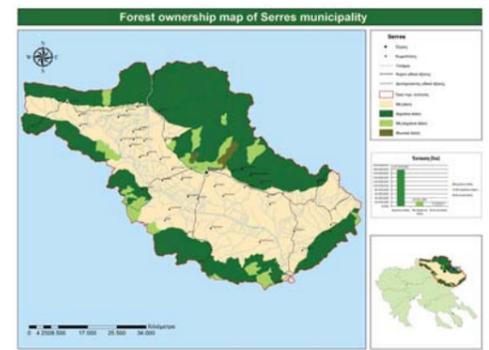
Central Macedonia Prefecture forest ownership map



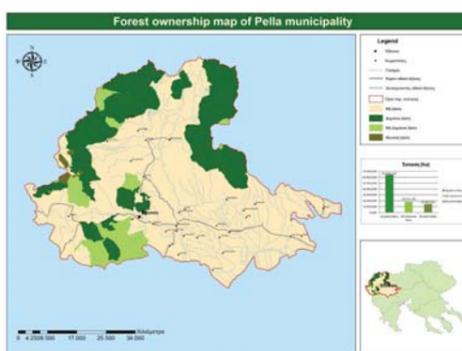
Imathia municipality forest ownership map



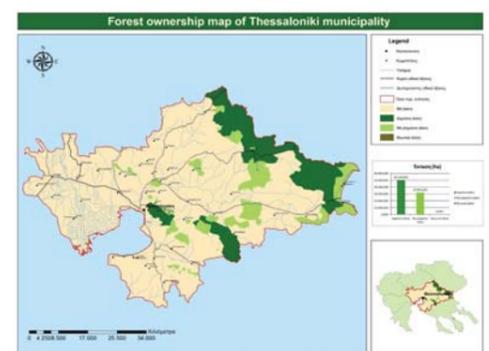
Kilkis municipality forest ownership map



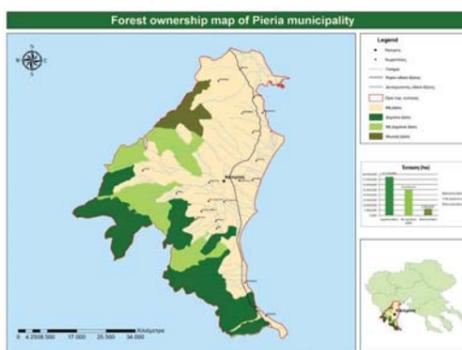
Serres municipality forest ownership map



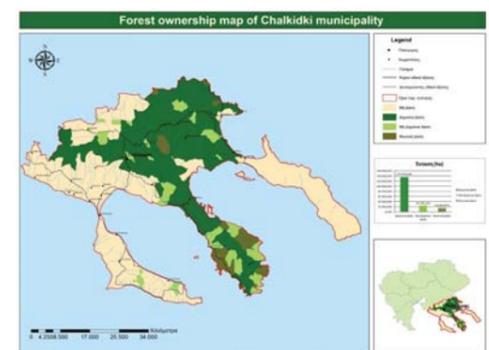
Pella municipality forest ownership map



Thessaloniki municipality forest ownership map



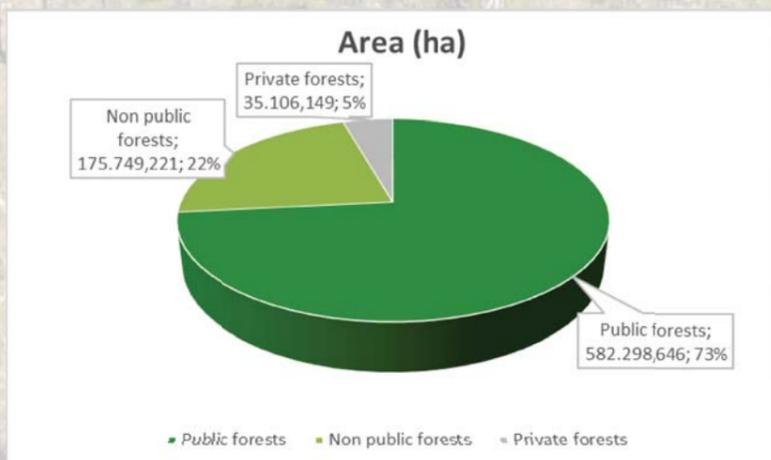
Pieria municipality forest ownership map



Chalkidiki municipality forest ownership map

## CONCLUSION

This was the first attempt of visualization and mapping of the forest ownership status in Central Macedonia in North Greece. A lot of data were collected and visualized in order to map all the municipalities of the prefecture. For a further development it is needed a better and more accurate approach in some areas in order to achieve a more accurate result and to map all Greece with its forest ownership status.



# The contribution of Greek forestry in tackling the economic crisis.

SAMARA T.<sup>1</sup>, MANTZANAS K.<sup>2</sup>, SPANOS I.<sup>1</sup>, PLATIS P.<sup>1</sup>

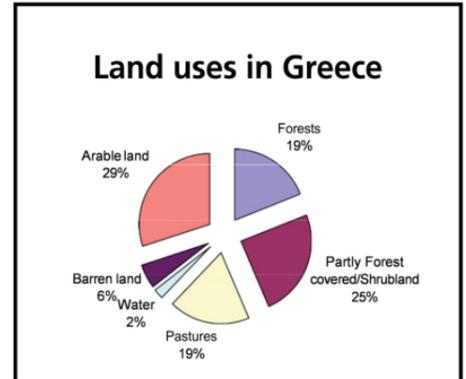
<sup>1</sup> Forest Research Institute, Thessaloniki | <sup>2</sup>AUTH, Forestry and Natural Environment dept, Thessaloniki

## GENERAL

Forests provide a variety of goods and services to the society. Goods include wood (timber, firewood and other wood products), fodder, fruits, shelter and other non-wood products. Services comprise employment, recreation, hunting, grazing, protection of human settlements, and protection of soil erosion, a variety of habitats for wildlife, carbon storage and moderation of climate.

Half of Greece is covered by forest and other woodlands.

In Greece, was been estimated that 65.5% of the forest land belongs to the State, 26.5% to non-public sector (municipalities, monasteries, welfare institutions) and 8.0% to private owners.



Land uses in according to the first inventory of Greek forests

## DEVELOPMENT POTENTIAL

- increase in forest production and improvement of quality and value of produced products



Chestnut poles

- protect soil and water resources

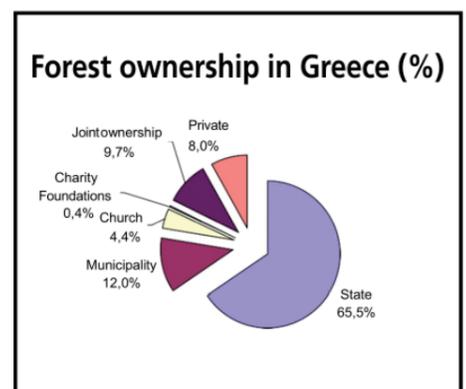


Wooden barrier, peri-urban forest Thessaloniki

- utilization of woody biomass for energy and other purposes



Pellets



Forest owner structure in Greece

- expansion of forest production in new directions as:

➔ non-wood products e.g. honey, mushrooms, herbs



Beehives, Agio Oros



Mushrooms



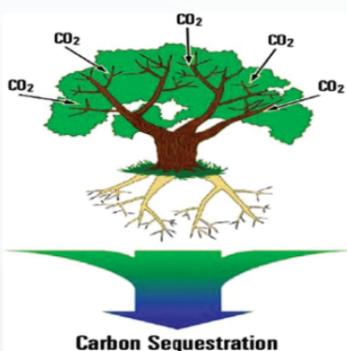
Lavender, Agio Oros

➔ services e.g. tourism



Forest tourist village, Fthiotida

- carbon sequestration



Carbon Sequestration

- participation in emissions trading



Thermoelectric plant, Ptolemais

- promoting development in the protected forests of the country



National Park Olympus, Macedonia



National Park Samaria, Crete

- conversation of genetic resources, biodiversity and natural heritage



Butterfly



Terrestrial turtle



Orchid, mount Taygete

# Historical institutionalism as framework for analysis of Government regulation of forest practices on private forest land in the Republic of Macedonia

**Authors: Vladimir Stojanovski and Makedonka Stojanovska**  
**Forest Faculty in Skopje, University "Ss Cyril and Methodius" - Skopje**

## Introduction

Macedonia in 1991 was disintegrated from Yugoslavia, changing from monopolistic, one party in a democratic and market oriented system.

Private ownership, as a whole, and private forestry as such was neglected in the previous system. In the beginning of its foundation forest policy was still unchanged. The first changes appeared in 1997 when a new Law on Forest was carried out, and the second one in 2009.

In 1997 group of private forest owners established Association of Private Forest Owners (APFO).

In 2006 after one head office and 6 branches in Macedonia, APFO become a National Association of Private Forest Owners (NAPFO)

The paper examines recent changes in forestry regulations (Forest Law) regarding the forest practices on private forest land in Macedonia

## Methods

The main goal of this paper is to analyze the influence of the new forest regulations concerning forest practices on private forest land and identifying potential conflict of interests regarding forest practices in Macedonia.

RQ 1: Do the new government regulations enable Public Enterprise Macedonian Forests (PEMF) a monopoly position?

RQ 2: Is conflict of interest stimulated by these government regulations?

Descriptive and exploratory

Qualitative data collected through: a) content analysis of the main forest government regulation (Forest Law); and b) Interviews with relevant forest actors.

Main focus on Law on Forest 2009 and 10 amendments after  
Interviews with 2 PFO, 2 managers of licenses companies, 1 consultant and 1 expert for PF issues and 1 PEMF

## Literature review

Theories of new institutionalism are particularly useful in explaining (lack of) policy change, since they focus on how and why institutions originate, persist and evolve and on the process of institutional reproduction and institutionalization (Alley 2001).

From historical institutionalism perspective, actor's behavior is determined by institutions, which influence actor's choices as well as its interpretations and views.

For historical institutionalists "path dependency" is main factor for explaining incremental change, explains how inherited institutional context influence the development and push so-called "trajectories"

## Results

The amendments in 2011, 2013 and 2014 were crucial for regulating the forest practices on private forest land.

The Amendments on 2011 and 2013 give freedom and space for developing private business the amendment in 2014 limited the forest practices in PF giving the power to the PEMF.

The data from the interviews shows that PFOs, managers of licenses companies as well as expert and consultant for PF issues consider the amendment from 2014 as barrier for development of PFO while the representative of PEMF consider this amendment as necessary because they are the only which take care about the forests.

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## Discussion & Conclusions

The Treaty on the Functioning the European Union (TFEU) - According to TFEU article 37 monopolies are not forbidden in EU, although state monopolies of a commercial character and the principle of free movement of goods are rather awkward companions, it has to be adjusted to ensure abolition of discrimination.

While, where the commercial monopolies (existing one) has to be adjusted and the introduction of **new measures is forbidden**

The data from the interviews shows conflict of interests: (5), "... within the 2013-2014 on Macedonian firewood market ... more and more firewood from private forest land has coming and ... finally the PFO has started to act as PEMF competition". (6) "It is unclear situation. You have two actors on the firewood market PFOs and PEMF and Government carry out decision to give all power and competency to PEMF – this is typical example of conflict of interest".

Institutions are considered as persistent and the considered institutional change through gradual adaptation. The "new structure regulated" (can be also consider as inefficient) in the Forest law in 2009 was completely new (structure), the new trajectories in the amendments in 2011 and 2013 present gradual adaptation of this structure. The trajectories doesn't mean progress and because positive feedback can occur in such trajectories, there can be a tendency to "recycle" decisions in inefficient institutional structures. Does the amendment from 2014 is another example of entrance in another "inefficient structure"?

Annex



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FP1201 FACESMAP

## Forest ownership changes in Europe: trends, issues and needs for action FINAL CONFERENCE of the COST Action FP1201 FACESMAP

7 – 9 September 2016

University of Natural Resources and Life Sciences, Vienna

### PROGRAMME

#### Final

DAY 1: 7 September 2016			
Exnerhaus/Schwackhöferhaus, University of Natural Resources and Life Sciences, Vienna Peter-Jordan-Strasse 82, 1190 Vienna			
Time/Place	Topic	Moderator	Room
8:00-9:00	Registration	Local organisers	Hall, Exnerhaus (EH01)
<i>Plenary sessions</i>			
9:00-9:45	<b>Opening of the conference</b> <ul style="list-style-type: none"> <li>- Welcome by local host (Dean Barbara Hinterstoisser) and Action Chair (Gerhard Weiss)</li> <li>- Guest addresses Bernhard Wolfslehner (EFI), Martin Greimel (SUMFOREST)</li> <li>- Introduction to the conference and highlights of the COST Action FACESMAP (Gerhard Weiss)</li> </ul>	Anna Lawrence	Plenary room EH01
9:45-10:30	<b>Keynote presentation</b> <ul style="list-style-type: none"> <li>- <b>John Bliss</b>, OSU College of Forestry, US: “Asking Questions and Listening to Stories: Reflections on Three Decades of Forest Ownership Research”</li> <li>- Discussion</li> </ul>		Plenary room EH01
10:30-11:00	Coffee break		Hall, Schwackhöferhaus
11:00-13:00	<b>Selected COST Action FACESMAP results</b> <ul style="list-style-type: none"> <li>- <b>Anna Lawrence</b>: “The dynamic landscape of forest ownership in Europe: what does it mean for society and policy? A synthesis of the FACESMAP findings”</li> <li>- <b>Diana Feliciano</b>: “TRAVELLAB – A new participatory research method”</li> <li>- <b>Liviu Nichiforel</b>: “Degrees of freedom - A property rights assessment of forest ownership in Europe”</li> <li>- <b>Gun Lidestav</b> with <b>Svarte Swartling</b>: “Understanding and serving evolving forest ownership objectives– A dialogue between research and practice”</li> </ul>	Teppo Hujala	Plenary room EH01
13:00-14:30	Lunch and poster walk	Zuzana Sarvašová	Hall, Schwackhöferhaus





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<i>Parallel sessions</i>					
<b>14:30-16:30</b>	<b>Parallel session 1</b> (4 ppt x 30'each)	<b>Parallel session 2</b> (4 ppt x 30'each)	<b>Parallel session 3</b> (3 ppt x 30'each)		Rooms SR04, SR06, SR09
<b>16:30-17:00</b>	Coffee break				Hall, Schwackhöferhaus
<b>17:00-19:00</b>	<b>Parallel session 4</b> (4 ppt x 30'each)	<b>Parallel session 5</b> (4 ppt x 30'each)	<b>Parallel session 6</b> (4 ppt x 30'each)		Rooms SR04, SR06, SR09
<b>20:00</b>	Joint conference dinner: "Das Schreiberhaus", Rathstrasse 54, 1190 Vienna				

<b>DAY 2: 8 September 2016</b>					
Exnerhaus/Schwackhöferhaus, University of Natural Resources and Life Sciences, Vienna					
<b>Time</b>	<b>Topic</b>			<b>Moderator</b>	<b>Rooms</b>
<i>Parallel sessions</i>					
<b>8:30-10:30</b>	<b>Parallel session 7</b> (3 ppt x 30'each)	<b>Parallel session 8</b> (4 ppt x 30'each)	<b>Parallel session 9</b> (2 ppt x 30'each)		Rooms SR04, SR06, SR09
<b>10:30-11:00</b>	Coffee break				Hall, Schwackhöferhaus
<i>Plenary sessions</i>					
<b>11:00-13:00</b>	<b>Interactive wrap-up session</b> <b>PANEL DISCUSSION</b> <ul style="list-style-type: none"> <li>- Felix Montecuccoli / Johannes Kyrle, President/Vice-President of the Austrian Forest Land Owners Organisation (CEPF Board Member)</li> <li>- Svarte Swartling, NORRA, Northern Forest Owners (Sweden)</li> <li>- Rosario Alves, FORESTIS, Forest Owners' Association of Portugal</li> <li>- Jenny Wong, LLais y Goedwig, Association of Community Forests of Wales (UK)</li> <li>- Eric Dresin, CEETTAR</li> <li>- Florian Steierer, UNECE/FAO Forest and Timber Section</li> <li>- Gun Lidestav, SLU, SWE (WG1 Leader)</li> <li>- Diana Feliciano, Uni. Aberdeen, UK (WG2 Leader)</li> <li>- Teppo Hujala, LUKE, FI (WG3 Leader)</li> </ul> <b>DISCUSSION WITH AUDIENCE</b>			Anna Lawrence	Plenary room EH01
<b>13:30-14:00</b>	<b>Closing session</b> <ul style="list-style-type: none"> <li>- Vilis Brukas, SLU, SWE: A feedback from an external evaluator to the Action participants</li> <li>- Wrap up of the conference, wrap up and further activities of the Action, Action Chair (Gerhard Weiss)</li> <li>- Closing of the public conference</li> </ul>			Gerhard Weiss	Plenary room EH01





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<b>14:00-15:00</b>	Lunch		Hall, Schwackhöferhaus
<i>Conference end</i>			

WG meeting of COST Action FP1201 FACESMAP			
Time	Topic	Moderator	
<b>15:00-15:30</b>	<b>Opening and introduction</b> - Welcome by local host/Action Chair - COST Action FACESMAP – update - Plan and aims of the meeting	Local organizer/Action Chair - Gerhard Weiss	Conference room SR06
<b>15:30-17:00</b>	<b>Task-group/Sub-group parallel meetings</b>		Rooms SR04, SR06, SR09
<b>17:00-17:30</b>	Coffee break		Hall, Schwackhöferhaus
<b>17:30-19:00</b>	<b>Task-group/Sub-group parallel meetings</b>		Rooms SR04, SR06, SR09
<b>20:00</b>	Joint dinner (Action participants): Restaurant “Kardos”, Dominikanerbastei 8, 1010 Vienna		

<b>DAY 3: 9 September 2016</b>			
University of Natural Resources and Life Sciences, Vienna			
Time	Topic	Speaker / Moderator	Rooms
<b>08:30-10:00</b>	<b>MC meeting</b>	MC members	Room SR06
<b>10:00-10:30</b>	Coffee break		Hall, Schwackhöferhaus
<b>10:30-12:30</b>	<b>UNECE study meeting</b>	Florian Steierer	Room SR06
<b>12:30-13:30</b>	Lunch		Hall, Schwackhöferhaus
<b>13:30-15:00</b>	<b>SG meeting/Special issue editorial meeting</b>		Room SR06
<i>Meeting end</i>			





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## Parallel sessions

### DAY 1: 7 September 2016

<b>14:30-16:30</b>	<b>Parallel session 1</b> (4 ppt x 30' each)  Room 06	<b>Parallel session 2</b> (4 ppt x 30' each)  Room 09	<b>Parallel session 3</b> (3 ppt x 30' each)  Room 04
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#### Parallel session 1 - Advancing the understanding of forest ownership (Chair: Heimo Karppinen)

1	<b>Matilainen, A.</b> , Koch, M., Zivojinovic, I., Didot, F., Lidestav, G., Lähdesmäki, M., Karppinen, H., Jarsky, V., Pollumae, P., Colson, V., Hricova, Z., Glavonjic, P., Scriban, R.	anne.matilainen@helsinki.fi	Understanding the forest ownership in different forest owning cultures
2	<b>Butler, B. J.</b> , Butler, S. M., Markowski-Lindsay, M.	bbutler01@fs.fed.us	Family forest owners of the USA: Life cycle and cohort effects
3	Lidestav, G., <b>Ní Dhubháin, Á.</b> , Karppinen, H., Zivojinovic, I., Westin, K., Ficko, A.	Gun.Lidestav@slu.se	European non-industrial private forest owners: the art of typology creation and their use
4	<b>Feliciano, D.</b> , Bouriaud, L., Brahic, E., Deuffic, P., Dobsinska, Z., Jarsky, V., Lawrence, A., Nybakk, E., Quiroga, S., Suarez, C., Ficko, A.	diana.feliciano@abdn.ac.uk	How do European forest owners perceive forest management?

#### Parallel session 2 - Advisory systems for various forest owner types (Chair: Zuzana Sarvasova)

5	<b>Hujala, T.</b> , Hamunen, K., Kumela, H., Kurttila, M., Tikkanen, J.	teppo.hujala@luke.fi	Boosting female forest owners' self-efficacy by means of peer-learning
6	Nonić, D., <b>Glavonjić, P.</b> , <b>Nedeljković, J.</b> , Avdibegović, M., Pezdevšek Malovrh, Posavec, S., Stojanovska, M.	dragan.nonic@sfb.bg.ac.rs	Organization of forestry extension services in South-Eastern Europe
7	<b>Lawrence, A.</b> , Deuffic, P., Hujala, T., Nichiforel, L., Lind, T., Wilhelmsson, E., Teder, M., Vilkriste, L., Jodlowski, K., Marchal, D., Feliciano, D., Talkkari, A.	anna@randomforest.ink	Extension, advice and knowledge exchange for private forestry: An overview of diversity and change across Europe
8	<b>Stoettner, E. M.</b> , Ní Dhubháin, Á.	evelyn.stoettner@ucdconnect.ie	The social networks of Irish private forest owners; the role of group membership and harvesting behaviour

#### Parallel session 3 – Forest owners and policy making processes (Chair: Liviu Nichiforel)

9	<b>Böhling, K.</b>	boehling@tum.de	European forest policy and forestry Capacity-building for policy entrepreneurship in Europe
10	<b>Wilkes Allemann, J.</b> , Lieberherr, E.	jwilkes@ethz.ch	Stakeholder perceptions of Swiss forest policy an analysis of the Swiss forestry sector
11	<b>Keskitalo, E. Carina H.</b> , Lawrence, A., Andersson, E.	elias.andersson@slu.se	Adaptation to climate change in forestry perspectives on forest ownership in policy implementation





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<b>17:00-19:00</b>	<b>Parallel session 4</b> (4 ppt x 30' each)  Room 04	<b>Parallel session 5</b> (4 ppt x 30' each)  Room 09	<b>Parallel session 6</b> (4 ppt x 30' each)  Room 06
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**Parallel session 4 – Common and community ownership – often neglected ownership types**  
(Chair: Aine Ni Dhubhain)

12	<b>Wong, J.</b> , Posavec, S., Stojanova, B.	jenny.wong@wildresources.co.uk	Mapping the space between private and public forest ownership in Europe
13	<b>Lawrence, A.</b> , Bogataj, N., Gatto, P., Lidestav, G.	anna@randomforest.ink	Across space and time: making sense of community forest ownership and management in Europe
14	<b>Kluvankova, T.</b> , Udovc, A., Sottomayor, M., Brnkalakova, S., Lidestav, G.	tana@cetip.sk	Survival of forest commons in Europe? Social innovation to enhance the chance of forest commons
15	<b>Premrl, T.</b> , Hafner, A., Krč, J., Udovč, A.	preml.tine@gmail.com	Land tenure changes of agrarian commons as result of political system changes in the transition country

**Parallel session 5 – Forest management innovations for new owner types (Chair: Diana Feliciano)**

16	<b>Kajanus, M.</b> , Leban, V., Glavonjić, P., Krč, J., Nedeljković, J., Nonić, D., Nybakk, E., Posavec, S., Riedl, M., Teder, M., Wilhelmsson, E., Zälite, Z., Eskelinen, T.	miika.kajanus@savonia.fi	Business models generation in forest sector: exploring innovation potential
17	<b>Feil, P.</b> , Neitzel, C., Seintsch, B.	philine.feil@thuenen.de	Climate protection in small private forests in Germany – for owners and society (KKEG) Workshop report: A nationwide survey of willingness to act of private forest owners
18	<b>Bowditch, E.</b>	euan.bowditch.ic@uhi.ac.uk	Woodland resilience and management on private sporting estates in the Highlands of Scotland
19	<b>Kurttila, M.</b> , Hujala, T., Hänninen, H., Kumela, H.	mikko.kurttila@luke.fi	Family forest owners' opinion on potential forest leasing service in Finland

**Parallel session 6 – Governance of changing forest ownership (Chair: Kathrin Böhling)**

20	Zivojinovic, I., Dobsinska, Z., <b>Salka, J.</b> , Jarsky V., Oliva J., Nedeljković J., Petrovic N., Posavec, S., Beljan, K., Nichiforel, L., Sarvasova Z., Weiss, G.	ivana.zivojinovic@efi.int; dobsinska@tuzvo.sk; jaroslav.salka@tuzvo.sk	Actors and interests related to the restitution in the forestry sectors in transition
21	<b>Hujala, T.</b> , Urquhart, J., Quiroga, S., Zivojinovic, I., Weiss, G.	teppo.hujala@luke.fi	Policies indirectly affecting new forest owners in Europe
22	<b>Hanzu, M.</b>	mihail.hanzu@gmail.com	Governance and management practices in public forests of local communities in Romania, a systemic approach
23	<b>Sarvašová, Z.</b> , Pezdevšek Malovrh, Š., Krajer Ostoić, S., Kaliszewski, A., Avdibegovic, M., Pöllumäe, P., Mizaraite, D., Stojanovski, V., Nichiforel, L., Hrib, M., Nedeljkovic, J., Zivojinovic, I.	sarvasova@nlcsk.org	Role of Forest Owners Associations in Eastern Europe





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**DAY 2: 8 September 2016**

<b>8:30-10:30</b>	<b>Parallel session 7</b> (3 ppt x 30' each) Room 04	<b>Parallel session 8</b> (4 ppt x 30' each) Room 06	<b>Parallel session 9 - Gender</b> (2 ppt x 30' each and interaction) Room 09
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**Parallel session 7 – Evolving commons – renewal of a traditional ownership type? (Chair: Stanka Brnkalakova)**

24	<b>Lähdesmäki, M.</b> , Matilainen, A., Siltaoja, M.	merja.lahdesmaki@helsinki.fi	Legitimizing institutional choices in the forest ownership Building acceptability for jointly-owned forests
25	Górriz Mifsud, E., Olza, L., Montero, E., <b>Marini Govigli, V.</b>	elena.gorriz@efi.int valentino.govigli@efi.int	The challenges of coordinating forest owners for joint management
26	<b>Koch, M.</b>	marc.koch@lwf.bayern.de	“Fade out” or “Jump in”? - Forest ownership of small scaled forests in Bavaria – Activating forest owners and strengthening their “Forest-owner-identity”

**Parallel session 8 – Forest owners and the provision of forest ecosystem goods and services (Chair: Tatiana Kluvankova)**

27	<b>Gatto, P.</b> , Defrancesco, E., Mozzato D., Pettenella, D.	paola.gatto@produzione.agraria .unipd.it	Attitudes towards forest ecosystem services provision: what drives the choices of private forest owners in the Veneto region of Italy?
28	<b>Mostegl, N. M.</b> , Pröbstl-Haider, U., Jandl, R., Formayer, H., Suda, M., Haider, W.†	nina.mostegl@boku.ac.at	Understanding and directing small-scale private forest owner behaviour towards climate change adaptation
29	<b>Karppinen, H.</b> , Hänninen, M., Valsta, L.	heimo.karppinen@helsinki.fi	Forest owners’ views on storing carbon in their forests
30	<b>Colson, V.</b> , Marchal, D., Lecomte, H., Rondeux, J.	v.colson@oewb.be	Analysis of the softwood resources evolution in the Walloon private forest (Belgium)

**Parallel session 9 – Researching gender: an interactive session (Chair: Teppo Hujala)**

31	Lidestav, G., <b>Follo, G.</b> , Ludvig, A., Vilkriste, L., Hujala, T., Karppinen, H., Didolot, F., Lukmine, D.	gun.lidestav@slu.se	Talking and writing about gender - A dialogue-based session on new forest owners in Europe
32	Umaerus, P., <b>Lidestav, G.</b> , Högvall Nordin, M.	patrik.umaerus@slu.se	Do female forest owners think and act “greener”?
<b>Interactive session with audience participation</b>			





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### Posters (in hall)

1	Barnoiaiea I., Nichiforel L., Barbu C., Scriban R., Coşofreţ C.	ibarnoiaie@usv.ro	A typology of small scale forest vegetation evolution after natural or anthropic disturbance, in different management patterns
2	Riedl, M., Jarsky, V., Kajanus, M.	Riedl@fld.czu.cz	Application of expanded business model canvas in forestry
3	Dobšínská, Z., Sarvašová, Z., Jarský, V., Šálka, J., Hrib, M.	dobsinska@tuzvo.sk	Do common roots represent also similar present? – An analysis of the restitution process in Czech Republic and Slovakia
4	Sarvašová, Z., Ali, T., Djordjevic, I., Lukmine, D., Quiroga, S., Suárez, C., Hrib, M.	sarvasova@nlcsk.org	What does mean Natura 2000 payments for private forest owners in east EU?
5	Brnkalakova, S., Kluvankova, T., Marek, M. V.	stanislava.brnkalakova@stuba.sk	Carbon forestry as social innovation for wellbeing of European mountain regions
6	Scriban R., Nichiforel L., Barnoiaiea I., Bouriaud L.	ramona.scriban@usm.ro	Forest management patterns in Romanian small scale forestry: an application of DPSIR model
7	Güler, S., Gubbuk, H., Balkic, R.	gubbuk@akdeniz.edu.tr	Some examples of private forestry applications in Turkey
8	Górriz-Mifsud, E., Govigli, V., Antonio Bonet, J.	elena.gorriz@efi.int valentino.govigli@efi.int	Perception of nuisances and property rights shapes private forest owners views on wild mushroom picking policies
9	Meliadis M., Meliadis I.	miltos85_thess@hotmail.com	Mapping and digitization of forest ownership in Central Macedonia region, N. Greece
10	Samara T., Mantzanas K., Spanos I., Platis P.	theasam@fri.gr	The contribution of Greek forestry in tackling the economic crisis
11	Stojanovski, V., Stojanovska, M.	vlatko_5@hotmail.com	Historical institutionalism as framework for analysis of Government regulation of forest practices on private forest land in the Republic of Macedonia





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