



## Forest ownership changes in Europe: State of knowledge and conceptual foundations<sup>☆</sup>



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### ABSTRACT

Forest ownership is changing in Europe. Reasons include recent institutional changes in Eastern Europe, changing lifestyles of non-agricultural owners and afforestation. At present, there is little comparative analysis across Europe, and the implications that these changes have for forest management and for the fulfilment and redefinition of policy objectives have not been addressed systematically. This paper has been developed in the framework of a European research network on forest ownership change, based on conceptual work, literature reviews and empirical evidence from 28 European countries. It aims to provide an overview of the state of knowledge, to discuss relevant issues and provide conceptual and practical foundations for future research, forest management approaches, and policy making. In particular, it discusses possible approaches for classifying forest ownership types and understandings of “new” forest ownership. One important insight is that the division into public and private forests is not as clear as often assumed and that an additional category of semi-public (or semi-private) forms of forest ownership would be desirable. Another recommendation is that the concepts of “new forest owners” vs. “new forest owner types” should be differentiated more consciously. We observe that, in research and policy practice, the mutual relations between forest ownership structure and policies are often neglected, for instance, how policies may directly and indirectly influence ownership development, and what different ownership categories mean for the fulfilment of policy goals. Finally, we propose that better support should be provided for the development of new, adapted forest management approaches for emerging forest owner types. Forest ownership deserves greater attention in studies dealing with forest policy or forest management.

### 1. Introduction

The diversity of forest ownership categories and the high number of individual forest land owners are important characteristics of European

forestry (FOREST EUROPE, 2015). According to data from 28 European countries in the FACESMAP Country Reports<sup>1</sup> (Živojinović et al., 2015), some 60% (around a billion hectares) of all forest land is privately owned. The proportion owned by individuals and families (rather than

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<sup>1</sup> COST Action FP1201 FACESMAP on “Forest Land Ownership Change in Europe: Significance for Management and Policy” (2012–2016) Country Reports, including the following countries: Austria (AT), Bosnia and Herzegovina (BA), Belgium (BE), Bulgaria (BG), Switzerland (CH), Czech Republic (CZ), Germany (DE), Estonia (EE), Greece (EL), Spain (ES), Finland (FI), France (FR), Croatia (HR), Hungary (HU), Ireland (IE), Lithuania (LT), Latvia (LV), FYR Macedonia (MK), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Serbia (RS), Slovenia (SI), Slovakia (SK), Sweden (SE), Turkey (TR), United Kingdom (UK). Website: <http://facesmap.boku.ac.at/>.

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companies) varies, as does the distribution of forest holding sizes. According to [Schmithüsen and Hirsch \(2010\)](#), 61% of all private forest holdings are less than 1 ha. Only 1% of owners have forest units over 50 ha. Large holdings owned by private forest companies are uncommon in Europe except in Sweden and Finland. Some of these companies have extended their business models by investing in the acquisition of large forest areas in former socialist countries (e.g. in Romania, Czech Republic). Coherent statistical data sources that would allow reliable, consistent and detailed comparative analyses of the distribution of various public and private forest ownership types, family forests vs companies or across size classes on European level are very limited.

In the last two decades, diversity of ownership has increased considerably – in Eastern Europe (EE) following restitution and privatization processes, and in Western Europe following social and economic change, and establishment of new ownership categories such as community forests, environmental associations and foundations. The situation is more diverse than a simple east/west dichotomy, however. While the share of forest land owned by private individuals (or group of heirs) in Austria, Denmark, Finland, France, Norway, Portugal, Spain, and Slovenia exceeds two thirds of the total forest area, the shares of family and public ownership in most Eastern, South-eastern (SEE) and Central European countries are more balanced (35–65%). The smallest shares of non-industrial private forests are found in Turkey (0.5%), and in Greece, Poland and Bosnia Herzegovina (around 20%) ([Hirsch et al., 2007](#); [FOREST EUROPE, 2015](#)).

In recent years, demographic and social changes have stimulated a growing diversity of private owners' interests, values and demands towards their forests and forest management types, which in turn influence hierarchies of priorities regarding their management decisions ([Ziegenspeck et al., 2004](#)). This increased diversity has been extensively studied in some European countries, with the aim of categorising the variety of forest owner types for policy and practice purposes (e.g. [Boon et al., 2004](#); [Ficko and Boncina, 2013](#); [Hogl et al., 2005](#); [Ingemarsson et al., 2006](#); [Karppinen, 1998](#); [Lawrence and Dandy, 2014](#); [Selter et al., 2009](#)).

Forest-related policies and management concepts often do not account for different land ownership types, but rather assume that owners have an active management interest in their forests. There are, however, pronounced differences in the market participation of forest owners in different European regions and across forest owner types ([Stern et al., 2010](#)). Instead of assuming a default response to policy instruments, policy-makers might achieve desired outcomes by designing specific policy instruments appealing to different segments of owners. Only a part of European forests are managed by forest companies or traditional agricultural owners with a more predictable policy response. This share is shrinking as the number of farms in Europe is decreasing. Farm sizes are growing, but forests are often split among heirs who have other professions. The changes in the forest ownership structure are seen as a risk from the perspective of profit oriented forestry, for which bigger properties are more suitable ([Korhonen, 2010](#)). As a result of this structural change in agriculture, the share of owners who own only small parcels, have no connection to agricultural or forestry knowledge and practices, and are not interested in managing their property, is growing. This phenomenon is known as the rising number of “new”, “absentee”, “non-resident”, “urban” or “non-traditional” forest owners ([Harrison et al., 2002](#); [Hogl et al., 2005](#); [Stern et al., 2010](#)). This is a phenomenon of Western European countries and in a specific way in many Eastern and South Eastern European countries after the restitution of nationalised forest land to the former private owners.

In the former-socialist countries, the restitution of forests has brought new policy challenges as the private owners have sometimes applied management practices in their restituted forests oriented at short term profits rather than the socialist legacy of strong technical forestry ([Lawrence, 2009](#)). In other parts of Europe, policy makers have

long seen the lack of forest management among forest owners as a severe policy challenge, particularly in the countries of north-west Europe with high population densities ([Lawrence and Dandy, 2014](#); [Van Herzele and Van Gossum, 2009](#)). Changing owners may be less important than changing values of existing owners, in these cases. In the same area of Europe, natural forest expansion and reforestation policies are significant, and lead to the creation of another group of ‘new forest owners’ – those who have new forest on land which they already owned ([Lawrence and Dandy, 2014](#); [Ní Dhubbáin and Greene, 2009](#); [Van Gossum et al., 2009](#); [Van Gossum et al., 2010](#)). Separately, the commercial forest investment sector is an area where little is known about changing ownership and its effects.

These manifold ownership-related developments have implications for management of private family-owned forests and, through this, the provision of forest ecosystem services and fulfilment of emerging national and European policy goals for forests such as biodiversity conservation, climate protection, strengthening of the bio-economy or rural development. The relation of different owner types to the fulfilment of policy goals, is, however, a question that has been considered to a very limited degree in forest policy studies, although the role of owners is very obvious and often confirmed in research, for instance, when it comes to nature conservation ([Weiss et al., 2017a](#)) or biomass production ([Weiss et al., 2017b](#)) or climate change adaptation ([Andersson et al., 2017](#)).

Overall, the question of forest ownership and changes in the ownership structure has not been studied comprehensively. A noteworthy exception is the work of IUFRO group 3.08.00 Small-scale Forestry (e.g., [Herbohn, 2006](#)). In the United States of America (USA), the study of private forest owners covers a range of perspectives, including typologies and practical implications ([Butler and Leatherberry, 2004](#); [Butler et al., 2010a, 2010b](#); [Emtage et al., 2007](#); [Bliss and Kelly, 2008](#); [Kelly and Bliss, 2012](#); [Kueper et al., 2013](#)). European research on changing forest ownership patterns has focused mainly on local, regional or national scale, particularly in Middle, Northern and Eastern/South-Eastern European countries. European level studies are rare ([Stern et al., 2010](#)). Exceptions include the work of COST Action E3<sup>2</sup> on forest owners' attitudes ([Terrasson, 1998](#)) and a study of small-scale ownership across Europe based on data from eight European countries ([Wiersum et al., 2005](#)). An overview of the state of knowledge on private forest ownership in Europe was provided under UNECE/FAO<sup>3</sup> ([Schmithüsen and Hirsch, 2010](#)), a study for the EFINORD<sup>4</sup> Work Plan ([Jonsson et al., 2013](#)) and another recent European Forest Institute's (EFI) report on and map of the distribution of forest ownership in Europe ([Pulla et al., 2013](#)).

Nation-wide permanent monitoring systems are also rare, with exceptions in Baden-Württemberg ([Brandl et al., 1999](#)), Finland ([Karppinen and Hänninen, 2006](#); [Leppänen, 2010](#)) and Sweden ([Berg Lejon et al., 2011](#)). In Sweden, an annual survey of about 2000 forest owners is carried out.

Recent literature has started to examine broader implications of changing ownership, for instance: i) effects on provision of forest ecosystem services other than timber (e.g., [Eggers et al., 2015](#); [Mozgeris et al., 2016](#)); ii) systematic incorporation of ownership change in studies on forest management models and in forest policy design and implementation ([Butler et al., 2010a, 2010b](#); [Hengeveld et al., 2017](#); [Trubins et al., 2017](#)).

In summary, there is a growing but still fragmented scientific literature on forest ownership patterns in Europe, goals, motivations and strategies of different ownership types, and influence of relevant

<sup>2</sup> Forestry in the Context of Rural Development ([http://www.cost.eu/COST\\_Actions/fps/E3](http://www.cost.eu/COST_Actions/fps/E3)).

<sup>3</sup> The joint ECE/FAO Forestry and Timber Section (<http://www.unece.org/forests/welcome.html>).

<sup>4</sup> The North European Regional Office of the European Forest Institute (<http://www.efinord.efi.int/portal/>).

policies. Furthermore, country-specific studies apply different concepts, definitions and typologies. This makes it difficult to answer question such as ‘what are the common trends and issues?’; ‘what are local or regional specific phenomena?’

As a result of the recent COST Action FP1201 FACESMAP which was able to review the state of knowledge, this paper aims to clarify conceptual issues relating to forest ownership issues. It compares different theories and definitions of ownership types, and asks which kinds of policies impact these ownership types, with what consequences for and through forest management.

The paper is based on conceptual discussions in the framework of the COST Action FACESMAP, a European research network programme titled “Forest Land Ownership Changes in Europe: Significance for Management and Policy”, extensive literature reviews (Ficko et al., 2017; Lidestav and Ni Dhubbain, 2015; Nybakk et al., 2015; Quiroga et al., 2015) and empirical evidence from 28 European countries (Živojinović et al., 2015). As a conceptual paper, it lays foundations for future research on changing forest ownership and its implications for policy and practice.

## 2. How to define forest ownership types?

In the empirical study of forest ownership changes we first need clarity on how to describe forest ownership and which kinds of changes we want to analyse. For this purpose, typologies of forest owners have been created which include a range of issues and forest owner characteristics.

Studies of forest ownership often focus on privatization and restitution (Lawrence, 2009; Mizaraite and Mizaras, 2005; Nichiforel, 2010; Weiss et al., 2012), wood mobilisation (Stern et al., 2010; Lawrence, 2018), cooperation of small owners (Mendes et al., 2011; Sarvasova et al., 2015), innovation and entrepreneurship (Ambrose-Oji et al., 2015; Lunnan et al., 2006; Ní Dhubbáin et al., 2007; Rametsteiner et al., 2005; Sikora and Nybakk, 2012), new, non-traditional or urban types of forest owners (Härddter, 2003; Hogl et al., 2005), newly planted forests (Lawrence and Dandy, 2014), changing property rights (Bauer et al., 2004; Bouriaud and Schmithüsen, 2005), common property in forests (Bouriaud, 2007; Glück, 2002; Kissling-Näf et al., 2002) and (new) community ownership (Lawrence and Ambrose-Oji, 2014; Schraml and Selter, 2011). Forest owner typologies are often based on the motives, goals, objectives and behaviour of owners but classification criteria vary widely between studies (Boon and Meilby, 2007; Emtage et al., 2007; Harrison et al., 2002; Hogl et al., 2005; Hugosson and Ingemarsson, 2004; Wiersum et al., 2005).

How forest ownership changes are determined and described depends on how owner types are conceptualised beforehand. Approaches in the literature include the following:

- the legal or customary form of forest ownership,
- institutional or socio-demographic and social characteristics of the owners, as well as socio-economic characteristics of the forest holdings,
- the owners' goals, attitudes and behaviour in forest management.

We discuss each of these and ways in which the typologies are applied in the sections below.

### 2.1. Legal form of ownership

From the legal perspective, the most basic distinction is between public and private forest ownership forms (FAO, 2015; Pulla et al., 2013; Schmithüsen and Hirsch, 2010). This may appear unproblematic, but there are, in theory and practice, different understandings of what is public or private. This becomes visible when comparing national ownership statistics and how, for example, municipal or community ownership is categorized. Traditional community ownership form is

defined as private in Austria, but as public in neighbouring Switzerland. Municipal ownership falls under the private category in the Czech Republic, Slovakia, Bulgaria and Latvia, but under public in Estonia, Poland and Romania (Živojinović et al., 2015). The distinction between state and private ownership is also not trivial: State forests may be managed by private companies such as stock companies or license holders, which blur the picture again. Furthermore, the public or private nature of ownership may be discussed in situations when private owners have land which is of high public interest and therefore strongly regulated, for instance, protected areas for nature conservation. The owners in fact hold only very limited property rights in those forest areas.

To clarify the issue, several distinctions must be made. According to property-rights theories, the labels ‘public’ and ‘private’ may be applied variously to goods, owners, properties or property rights (McKean, 2000, p. 30–31; Ostrom, 2000, p. 335–338; Cole and Grossman, 2002):

- *private goods* are defined according to the economic characteristics of a good which may be more or less excludable or rivalrous (or: subtractable) in use. This results in a four-way typology which includes, in addition to pure public goods (low excludability, low subtractability) and pure private goods (fully excludable and subtractable), common pool resources and club goods. The private or public nature of forest products does not rely on the form of ownership but on the economic characteristics, which stem partly from natural and partly from institutional conditions (Bouriaud and Schmithüsen, 2005; Glück, 2000, 2002; Mavsar et al., 2008).
- *private owners* represent themselves in claiming the rights, while *public owners* are institutional bodies that claim to represent the general population;
- *private property* is one property regime category, alongside state, common and open access property. The term “property regime” refers here to the structure of rights and duties characterising the relationships between individuals with respect to a specific good or benefit stream (Vatn, 2005, p. 256). Therefore, private property is owned by a specific individual or corporation who controls its use; common property is a resource held by a group of co-owners having a joint governance structure; state property is owned in the name of citizens and is formalized by an agent of the government; open access property is owned by anyone who can get access to it;
- *property rights* are specifications of what the right holders are entitled to do. The system of property-rights is described as “the set of economic and social relations defining the position of each individual with respect to the utilisation of scarce resources” (Furubotn and Pejovich, 1972, p. 1139). Property rights systems include the rights themselves and the formal and informal institutions that create them. Property rights over different assets may be assigned to different groups or individuals – in forests for example, the trees to the land owner, hunting rights to a hunters' association, and recreational use to the general public.

Forest owner classifications may relate to the public or private nature of the entity owning the land, or the characteristic of the ownership right. According to McKean (2000) it is the quality of the right which defines a property as public or private, in particular the question of the alienation right, i.e. if the owner is allowed to sell the property or not. It is commonly assumed that the State is not allowed to sell, in order to keep it for the public benefit; however, this is not generally the case. National, provincial or local governments owning land that they cannot sell would be seen as public owners in this view, but as private owners if allowed to sell. Common forest properties are often regarded as private since they are owned by a collective of private entities. Since these properties and the individual shares are usually not tradable outside the collective, they would be regarded as public or at least semi-public from this property rights view (Bouriaud and Schmithüsen, 2005).

Thus we arrive at different classification results if we refer to the nature of the owning entity (as used, for instance, in the definition by FAO Global Forest Resource Assessment, FRA), or the nature of the ownership right (applied in some national statistics). We may also conclude that a category of semi-public (or semi-private) would be purposeful for common property regimes or other ownership forms that lie in-between pure public or private forms.

In practice, depending on national policy frames and traditions, the main divisions that are seen differ: they may be public versus private (all public entities – including national State and municipalities – are seen as similar when compared to private owners), or conversely State versus non-State (seeing municipal forests as more similar to private forms). The latter dominates the discourse in many Eastern European countries where formerly nationalised forests have been restituted to former owners. So while, for instance, in Bulgaria municipal forests are classified as “private” in their national statistics, neighbouring Romania classifies their municipal forests as public (Živojinović et al., 2015).

In regard to community-managed forests, countries use different interpretations. In Switzerland, those considered as public forest owners include not only political municipalities (local governments) but also citizen communities (a collective of persons who have traditional citizen rights to that municipality; *Burgergemeinden*; the former “common” resources). In contrast, Austria, Norway, Slovenia, Sweden and United Kingdom classify (public) municipal/local authority forests and (private) community/common forest land in separate categories. Some countries classify their communal (Portugal) or municipal land (Finland, France) neither as public or private but as “other types” in the FRA (see below). Church forests are also classified in different ways: as private in some countries (e.g. Austria, Czech Republic, Serbia, Greece, Bulgaria, Estonia etc.), but a separate category in others (e.g., Slovenia).

In order to improve clarity, classifications should at least be internally consistent. International comparisons are inevitably hindered since countries have chosen either the nature of the ownership right as the starting point or the nature of the owning body. The definition developed for the Global Forest Resources Assessments (FRA) and which is often used also by other surveys (e.g. Schmithüsen and Hirsch, 2010), follows the latter approach. FRA (FAO, 2010) defines public forests as forests owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration. “State” is understood broadly here; public forests being often divided into state, provincial and municipal/communal forests. In FAO statistics, municipal forests are made visible as a sub-category of public forests under the name “communal forests” (dataset from 2006, Schmithüsen and Hirsch, 2010) or “public ownership by local government” (dataset 2016, ongoing study on forest ownership in ECE). However representatives of municipal forests prefer to see a separate category in addition to public (State) and private owners; this view is expressed in position papers of the European Federation of Municipal Forest Owners, FECOF, for instance, on the EU Forest Strategy (FECOF, 2014).

Private forests are defined in FRA as forests owned by individuals, families, communities, private co-operatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions. In contrast to the public communal forests which are owned by the local political entity, community/common forests are owned by a group of private individuals, typically from a historical local community. This form of common ownership is often defined by law as a special ownership category besides municipalities and voluntary co-operations, and could thus be referred to as a “semi-public” ownership form. Since they are a group of private individuals, they can also be referred to as a “semi-private” form.

A range of other forms of joint, philanthropic, church or charitable ownership have the primary goal of delivering social or environmental benefits rather than maximising financial or timber returns are

sometimes officially recognized in the form of charitable registration; these may also be seen as semi-public. In exchange for tax exemptions and access to charitable funding such an official registration in turn limits the rights of the owners to use profits and to dispose of assets. Alternatively, while no separate in-between category between public and private exists, community, church and charitable forests could be taken together as “semi-private” forest ownership, underneath the private category.

## 2.2. Structural attributes and social characteristics of forest owners and/or forest holdings

New forest ownership types are often referred to as “absentee” or “non-resident”, “urban” or “non-farm/non-agricultural” forest owners. It is often assumed that these attributes affect owner's values, goals and behaviour. They may be used as structural attributes which can easily be observed in the field, and in a separate step, their relation to values and behaviour may be studied (Hogl et al., 2005).

Structural attributes start from a distinction between institutional owners (public or private organizations, e.g. companies) and natural persons. The latter are then characterised by:

- Socio-demographic characteristics of owners (gender, age, job designation, school education level and/or type)
- Characteristics of forest holdings (size of enterprise, number of workers employed)
- Form of acquisition (inherited, purchased or given)
- Duration of ownership (length of tenure)
- Fragmentation of forest ownership (area of forest land, number of parcels)
- Distance of owners' primary residence to forests; residence in same municipality/region as the forest
- Urban residence (population of the municipality in which forest owners lived in their childhood and/or today)
- Connectedness with agriculture and forestry (grew up on farm, has farmers among relatives, has agricultural or forestry education, has profession related to agriculture or forestry, being a full-time or part-time farmer, forest is part of farm enterprise)
- Economic relevance of agriculture (time spent in and total and relative income earned from agriculture and/or forestry, total annual earned income).

On the basis of single or multiple structural characteristics, typologies may be created, leading to single-attribute or mixed types, or typologies created through cluster analyses. In an Austrian study, a cluster analysis produced seven types of forest owners in a continuum from more traditional or rural to more non-traditional or urban types (Hogl et al., 2005). In a Finnish study, a similar “urban-rural” continuum was identified for the forest owners' social identity (cf. Hujala and Tikkanen, 2008). In several German studies, the concept of “urbanisation” was related to forest owners' lifestyles (Härder, 2003; Ziegenspeck et al., 2004). Women are a fairly new category of forest owners from a research and policy point of view although gender implications in forest ownership are manifold (Follo et al., 2017). Gender has been disregarded in many scientific studies in the past and women have only recently been recognized officially as a category of forest owners (FAO, 2010).

Social characteristics relate to owners' values and attitudes towards society, nature, forests in general or their own forest property. The relevant values and attitudes of forest owners included in the research depend on the problem to be studied. Specific forest-related values and attitudes may include the following:

- Mental association with forests in general
- Attitudes towards one's own forest
- Attitudes towards work in one's own forest



- Attitudes towards the regulatory framework
- Opinions on timber harvesting and forest tendering

More general value-orientations such as entrepreneurial versus environmental values, or biocentric versus anthropocentric, may reflect owners' personal relationship to their forest land, and opinions about forest management. Such approaches could bring in a theoretical and explanatory dimension which is so far often lacking in forest owner studies and typologies.

### 2.3. Forest owners' management goals, attitudes and behaviour

The basic questions here are for which purpose do owners own (and/or manage) their forests and how do they do it? "Passive" owners may be uninterested, lacking capacities or may have consciously decided not to intervene in their forests. If managed, products may be wood or non-wood goods or services, and they may be produced for self-consumption or for markets. Furthermore, management as well as forest operations may be done by owners themselves, or contracted out. Membership in and utilisation of a forest cooperative or a forest owners' association may be relevant. It may further be asked how far the management is profit-oriented or considering social and environmental goals, e.g. certified by environmental management or sustainability labels. Propensity to eagerly adopt new technologies or management models reveals owner's innovativeness and character as innovation adopter, which has relevance when targeting communication and services. Finally, marketing and communication behaviour may be considered. The following factors may be thus relevant:

- Motivation and aims for owning the forest (e.g., family tradition, maintain capital, earn profit, fuel wood for self-consumption, other goals such as for hobby, recreation, nature conservation, etc.)
- Management goals (including timber/wood production, hunting, non-wood products, carbon sequestration, services such as tourism, nature conservation, etc.)
- Management done by owners themselves, by employees, or contracted out, or done with the help of public advisory services.
- Operations (harvesting, silviculture, etc.) done by owners themselves, by own workers, or contracted out.
- Membership and activity in forest cooperatives (joint management, work and/or marketing activities)
- Amount and ways of timber harvesting and timber sales
- Environmental/social orientation of forest management (integrated management approaches, PEFC and/or FSC certification, etc.)
- Entrepreneurial/innovation orientation in forest management (entrepreneurial attitudes, innovativeness, etc.)
- Communication behaviour (information on forest-related topics, importance of different sources of information, contacts to and demand for extension services, etc.).

Studies about forest owners' ways of forest utilisation are often motivated by very specific and practice-oriented research interests, such as innovativeness (Ni Dhubháin et al., 2006; Nybakk et al., 2009; Rametsteiner et al., 2005) and policy-related questions. Prominent research themes include owners' readiness to join or their preferences and opinions about associations, how they could be reached through communication measures or channels, and how they might be motivated for increased wood harvest – wood mobilisation (Kuuluvainen et al., 1996; Stern et al., 2010; Lawrence, 2018). Questions around the purpose of forest ownership concern both institutional and natural persons. A specific category is formed by institutional investors (e.g. in Romania, Latvia, Finland and the UK) that purchase forest land for intensive management.

### 2.4. Types of typologies

Typologies used in research apply quite different approaches with regard to methods (quantitative/qualitative), classification criteria (see above) and classification method (inductive/deductive) (Boon et al., 2004; Emtage et al., 2007; Ficko et al., 2017; Selter et al., 2009; Stern et al., 2010). Most studies apply quantitative surveys, using ad-hoc indicators and atheoretical classification techniques such as cluster analysis. They are most often based on ownership objectives (Karppinen, 1998; Kline et al., 2000; Kuuluvainen et al., 1996), sometimes on structural factors such as the connection to agriculture, residence or occupation (Hogl et al., 2005). They may also be based on mixed or multidimensional attributes (Hujala et al., 2013; Lidestav, 2010; Selter et al., 2009). When different types of characteristics of owners are used, and in order to draw causal inferences, anticipate future developments or derive targeted policy measures, the relations between the different types of variables need to be structured in a conceptual model. In a Finnish study this was tackled through a structured design, in which two groupings were cross-tabulated. The first grouping was based on owners' objectives for forest ownership, and the second one on owners' decision-making styles (Hujala et al., 2013). From a perspective of the degree of individuality or social connectedness of forest ownership, Lidestav and Ni Dhubháin (2015) suggest a 3-dimensional structure based on three fundamental attributes to be considered as gradual positions: first, if the forests are in individual or collective ownership; second, if the work in the forest management is done by the owner or contracted out; and third, if the goods or services produced are for subsistence or for the market.

Qualitative studies are rarer but increasingly applied in exploratory or inductive, interpretative ways and are important for understanding forest owner goals, motivations and behaviour. For further discussion see Ficko et al. (2017) and Takala et al. (2017).

As a conclusion it appears impossible to find a common typology; each will depend on the research interest of the study. Cross-country comparisons based on existing statistics must rely largely on legal aspects; research to understand and explain trends may be based on structural attributes and social characteristics; studies interested in implications for forest management would focus on the goals and utilisation of the forests. Combinations of different categories may be of specific interest from a theoretical point of view since they allow researchers to derive explanations for actual behaviour, be it via structural characteristics or through their value systems. Another promising avenue for future research may be interdisciplinary designs which relate forest owners' characteristics to measured forest management outcomes – their impact on markets or on the forest condition. Overall, stronger theoretical foundations and stronger explanatory orientation of studies are needed.

## 3. What is understood by new forest owners?

The concept of "new forest owners" is used in relation to ownership change. This needs some clarification. "New" may refer to different aspects, either to a change of the owner and thus to the length of tenure (new owner; for instance, in Newman et al., 1996); or to a change of the attitudes and/or behaviour of the owner (new ownership type; used in Hogl et al., 2005 and Matilainen et al., 2015).

### 3.1. Change of owner/length of tenure

What is understood as a new owner may be related to change through inheriting, purchasing or receiving as a gift. Restitution of formerly nationalised forests is another process creating new owners; recent examples are former socialist countries from Baltic, Central, Eastern and South-eastern Europe. In the case of restitution, the owners (or their parents) had been owners before and could thus be called the "old" or former owner. In reality, however, quite a long time has

passed, the forests are often returned to heirs of the former owners, and the restituted owners have often not seen themselves as legitimate forest owners in the intervening years. They tend to see themselves as newly receiving the forests of their families back, and often have lost the tradition of owning and managing forest (Živojinović et al., 2015). As a result, they are in a comparable situation to that of other new owners.

We suggest defining new owners according to how long they have owned their forest. The threshold which defines what is “new” may thereby depend on social, economic and cultural contexts. Newman et al. (1996) define new forest owners with a maximum tenure of 1.5 years, while Rämö and Toivonen (2009) define new as being up to 9 years.

A change in attitudes and behaviour may be, but is not necessarily, connected with this structural attribute. When talking about a change in *behaviour* of forest owners, in contrast, this may or may not result from a change in owners. If the new owner has the same management goals, he or she may still be in the same ownership category as before.

### 3.2. Change of attitude/behaviour type

Studies on different ownership types often ask whether the owners manage their forests differently under the same regulatory framework. They often focus on new ownership types because those may have new goals or management approaches. The question then is not so much the length of tenure but about knowledge, goals and management practices, which may have implications for service demands or policy response. Some names of ownership types refer to their backgrounds and goals (e.g., traditional or non-traditional owners). Take two examples (Nybakk et al., 2015): First, the son of a farmer who inherits the forest with the farm and still runs the farm and has the same traditional goals for forest management: He would be a new, but traditional owner, or more precisely, a new owner but belonging to a traditional ownership type. Second, a farmer who gives up farming for a different job in the city: She would possibly not manage the forest any more in the traditional way and would then be an old forest owner but with new goals. She then falls into a new ownership category, e.g. as absentee, urban, non-agricultural, and/or non-traditional forest owner. In sum, we suggest distinguishing clearly between talking about new *owners* or new *ownership types*.

## 4. How do policies and forest ownership development interrelate?

Although the role of forest owners' interest groups in policy-making has been studied in some detail, forest ownership structures have rarely been studied systematically across countries (but see Weiss, 2004). However, we can see mutual relationships (Quiroga et al., 2015): first, ownership structures affect the formation of policies and have a bearing on the fulfilment of policy goals; second, policies shape ownership development and set the frame for how owners may pursue their goals.

The first kind of relationship deals with forest ownership structure as national institutional settings for policy processes because they frame policy discourse, policy formulation and implementation. Different ownership types such as farm owners, urban owners, or forest investment companies have different interests but different capacities to influence policy-making processes. Being aware of the different goals, attitudes and behaviour of different forest owner types as discussed above, we must assume quite different preconditions between ownership types for the implementation of policy goals and instruments. This question is much discussed with regard to the future supply of various raw materials for forest industry and energy production (Stern et al., 2013; Ficko et al., 2017), but there are also implications for biodiversity conservation and other ecosystem services (Alphandéry and Fortier, 2001; Deuffic and Lyser, 2012; Paavola et al., 2009; Van Herzele and Van Gossum, 2009). What is rarely discussed is that, while changes may hinder certain policy goals, they may also offer new opportunities for

policy implementation. With the exception of specific regulations of State-owned forests, differentiated sets of policy instruments and strategies for different ownership types are quite limited. Relevant policy instruments are grants for private, common and cooperative woodland management (Mendes et al., 2011; Rametsteiner et al., 2005; Sarvasova et al., 2015; Weiss et al., 2012) and advisory services (Butler et al., 2010a, 2010b; Kueper et al., 2013; Lawrence et al., 2016), and a mix of instruments (Emtage et al., 2007; Van Gossum et al., 2009). More knowledge on successful approaches to reach different types of owners as well as hindrances is needed, for questions related to timber supply and wood mobilisation (Stern et al., 2010) and other forest goods and services (Mavsar et al., 2008).

The second kind of relationship includes direct and indirect influences of policy on ownership. Ownership structures are rarely consciously formed by policies, although important exceptions include the nationalisation and restitution of forests in ESEE, and the Land Reform Act in Scotland in 2003. However, ownership is influenced in indirect ways. Although much research has been done in Europe to characterize the individual-level and aggregate response to specific policies, our empirical understanding of how policy processes can slow down or accelerate the emergence of new forest ownership types is very poor. The literature includes case studies of policies which initiate or support ownership change in former socialist countries (Glück et al., 2010; Lazdinis et al., 2005), forestry decentralisation in UK (Munton, 2009) and in Spain (Montiel and Galiana, 2005). Here we analyse some of the critical policies that have historically defined and/or have still a direct effect on the actual panorama of ownership structure in Europe: (i) restitution and privatization processes, (ii) inheritance laws, (iii) land defragmentation policies, and (iv) creation of new forms of ownership. More indirectly, changes may also stem from (v) nature conservation policies (for instance, through acquisitions of land for protection purposes), (vi) agricultural policies (supporting or triggering afforestation) or (vii) property rights changes (Quiroga et al., 2015).

### 4.1. Restitution processes in central-eastern and south-eastern European countries and privatization

Considerable shifts in ownership structure have occurred due to restitution and privatization processes, which increase competition and commercialization by reducing the role of the public sector (Lengyel, 2002). They produce a large number of small private forest holdings, whose owners often lack the knowledge, skills and capacity for efficient and sustainable forest management (Bouriaud et al., 2013). Forest policy often lacks the strength to provide them with sufficient extension services and financial incentives which could help and incentivize them (Krott, 2008). To address this, forest policies in some CEE countries have supported the creation of forest associations and co-operatives, often through economic tools (e.g. Czech Republic, Slovakia, Latvia, Hungary) or regulatory instruments (e.g. Romania) (Sarvasova et al., 2015; Glück et al., 2010; Weiss et al., 2012). Premrl et al. (2015) found that in Slovenia the legal framework was too rigid for re-established agrarian commons and thus affects their efficiency in resource governance.

Through privatization and restitution, private family-based forest ownership has increased during the past two decades in the CEE and SEE region, and in many countries is on-going. Small and fragmented private properties are a common result, e.g. in Bulgaria, Czech Republic, Germany, Kosovo, Macedonia and Serbia more than 90% of the private forests have less than 1 ha (Bouriaud et al., 2013). In some cases, such processes implied unclear ownership for large areas. In Slovakia, for example, restitution has stagnated since 1997 owing to difficulty in determining the borders of small scale private forest properties and in submitting the necessary legal documents (Schmithüsen and Hirsch, 2010). For many countries, forests without clear ownership often remain unmanaged if not subdued to management by the state. In Romania, governmental documents show that, at

the end of 2010, 0.66 million ha of forests (10% of total) were in litigation to clarify ownership status. As a result, almost half of the first restituted forest land was clear felled or overharvested in a short period of time. This has increased negative views towards private forest owners (Bouriaud, 2005). Forest investment companies in former socialist countries have sometimes been criticised for overexploitation and driving up local prices, and sometimes praised for introducing efficient management practices and strengthening regional economies. Being under special observation by civil society organizations they often strive to have their forests certified to prove sustainable management.

The Baltic countries have, in addition to restitution, also pursued privatization of state forests in various ways and to different extents. Privatization has also taken place to a small extent in other European countries (Norway, Sweden, UK).

#### 4.2. Inheritance laws

The practice of splitting properties between relatives through inheritance is an important factor contributing to the increase in private forest owners. In many countries no specific rules exist to limit fragmentation. In other countries, inheritance rules limit fragmentation of the family-owned land. For example, all land of one estate is inherited by one heir who is engaged in agriculture, while all co-heirs are financially compensated (Nonić et al., 2006). An example for this is Austria where traditional farm holdings (“Erbhöfe”) should not be divided but given as a whole to only one heir. In Slovakia, forest land can be divided into several parcels between heirs, but based on the size of the inherited plot the inheritor must pay a fee. In the Spanish province of Catalonia most of the families respect the old rule “El hereu”, which is the informal institution establishing the inheritance rights to the eldest son to avoid the division of the properties (Živojinović et al., 2015).

In some CEE countries including Hungary, Slovakia or Bulgaria, inheritance law allows heirs to share the forest land in a so called “urbarium”, a historical-traditional form of shared ownership structure based on virtual shares. Also in other countries, holdings have become family-owned after inheritance, for example, in Belgium (Schmithüsen and Hirsch, 2010).

#### 4.3. Land defragmentation policies

Schmithüsen and Hirsch (2010) analysed specific strategies and measures for dealing with fragmentation of forests in Europe other than inheritance laws. The following countries issued special policies to avoid land fragmentation: (i) Austrian forest policy encourages associations of small forest owners to facilitate the forest management of small lots in some areas; (ii) Lithuanian and Slovakian forest law does not allow splitting of forest holdings into units smaller than a minimum (5 ha and 10 ha respectively); (iii) Cyprus Department of Forests purchases private forest lands to form an enclave into state forests; (iv) Romanian legislation requires forest owners to ensure forest management and imposes a minimum area of 100 ha for elaborating the mandatory forest management plan, thus triggering owners to associate, in order to be able to perform harvesting; (v) Norwegian forestry and agricultural regulations have worked against fragmentation although the stable structure also works against merging of properties.

Restrictions related to buying or selling forests also often aim to limit fragmentation. In Austria and Sweden, farms are not allowed to sell off parcels if the remaining farm holding would be too small to be profitable. Some countries prescribe pre-emptive rights which gives priority of buying the forest to neighbouring owners (e.g. in Austria, France, Lithuania, Slovenia, Romania) or according to criteria of knowledge and experience of forest management of new buyers (e.g. in Austria, Estonia, etc.).

In Finland this issue has been mitigated not through legal

restrictions or incentives but instead through communication campaigns to form jointly owned forests (Živojinović et al., 2015). Germany and Finland have official land consolidation practices to readjust unfavourable land division (Vitikainen, 2004). According to the Bavarian experience, land consolidation may lead to an increase of the share of “traditional” agricultural forest ownership again (Koch and Gaggermeier, 2011).

#### 4.4. Creation of new forms of ownership

A few country examples have been found where policies – in connection with various policy reforms – created new joint forest ownership forms. In the course of recent efforts to liberalise forest-related regulations in Finland, and in connection with communication campaigns to form jointly owned forests, co-owned forests have been recognized as a specific legal ownership form with specific regulations. In Flanders, Belgium, a specific form of co-owned forests have been piloted to provide ecosystem services via a new ownership form, a statutory partnership of several public forest owners and stakeholders (Vangansbeke et al., 2015).

In the UK, several policies created common ownership recently. In Scotland, for instance, the Land Reform Act (2003) created the “Community Right to Buy”, thus giving the right to rural communities to have the first opportunity to purchase rural estates when they come on the market, if the community can find the finances to purchase it at market value. By 2014, more than 30 communities had successfully applied to purchase forest, from small areas of less than 1 ha to large industrial forests of several hundred hectares (Ambrose-Oji et al., 2015). Similar community forests have been introduced in Wales but without the supporting Land Reform legislation (Živojinović et al., 2015).

#### 4.5. Nature conservation policies

Nature conservation policies may cause ownership changes either when the State itself buys areas for protection purposes, or when the protective status of forests induces an ownership change through market exchange. Examples where nature protection NGOs or the State protected areas have been reported for Slovakia and Greece (Živojinović et al., 2015). A qualitative change of ownership occurs when State authorities become involved in the elaboration of management plans in protected areas such as under the European Natura 2000 programme (Živojinović et al., 2015; Weiss et al., 2017a; see also section 4.7). In Bulgaria, private owners whose properties are included in protected areas have the opportunity to exchange it for land outside (Vodde, 2007). Overall, nature conservation policies have sometimes catalysed ownership changes but no large changes have been reported (Sotirov, 2017; Živojinović et al., 2015).

#### 4.6. Agricultural policies

Agricultural and rural development policies have had large effects on the afforestation of marginal private agricultural and pasture land, in the USA as well as in Europe (most prominently in Ireland, Germany or Norway) (Butler et al., 2010a, 2010b; Winter, 2013). Afforestation policies provide both technological and financial help to attract farmers to become forest owners through afforestation. A new forest owner type emerges for agroforestry or plantations of fast-growing species on agrarian land. In the EU, the CAP has promoted afforestation on agricultural land since 1990 (Regulation 2080/92) and afforestation measures were applied strongly in the Mediterranean countries (Spain, Italy, Portugal). A similar trend is observed after the enlargement of EU in 2004 in CEE. A significant afforestation rate is reported for Hungary and Poland in the past and intensive forest planting is still planned for the next decades (Zanchi et al., 2007; Živojinović et al., 2015).

#### 4.7. Change in property rights

Forest or nature conservation policies shape the quality of ownership through the definition of their property rights. Various prescriptions and restrictions limit forest owners' decision-making power over their land and ways of forest management. Restrictions of land-use changes and for forest management are the dominating regulations. Some countries also prescribe certain management practices, particularly in ESEE countries, while in Finland the forest laws were liberalised recently, allowing formerly forbidden uneven-aged management practices.

Within the structure of the COST Action FACESMAP, a method for calculating a national property rights index was developed (Nichiforel et al., 2018). The mapped results show a highly differentiated picture across Europe (Weiss et al., 2017b). Strong prescriptions exist in many former socialist countries in ESEE through strict definitions of management goals by law, through forest management planning by public authorities and through extensive forestland zoning into protected areas or special purpose forests (Nichiforel et al., 2018; Brukas and Sallnäs, 2012; Brukas et al., 2014). While forest policies in Europe generally have a liberalisation trend, nature conservation add restrictions, in recent time particularly through the European Natura 2000 policy (Sotirov, 2017).

#### 5. A need for new management approaches for new forest owner types?

The question of how far the existing forest management approaches and related services are appropriate for different ownership types includes various aspects. To date, few of these aspects have been dealt with in an in-depth manner. Technological issues of forest operations such as logistics are usually studied without specific reference to owner categories, and with little attention to related social questions such as whether forest workers and entrepreneurs will exist in meaningful numbers in the future (Bouriaud et al., 2011). Social networks are an important but little studied aspect that is important for forest entrepreneurs as much as for forest owners (Andersson and Lidestav, 2016; Nybakk et al., 2009). A pending issue is the potential of forest owners' cooperatives and associations in organising forest utilisation (Kronholm, 2015; Mendes et al., 2011; Glück et al., 2010) and other institutional arrangements facilitating new forest management (Nichiforel and Schanz, 2011). Moreover, forest management is facing novel and complex challenges with potential goal conflicts between timber production, biodiversity conservation, climate change adaptation and mitigation and provision of other ecosystem services (Wolfslehner and Seidl, 2010). A central question is which forestry approaches actually fit different ownership types, a question which is only rarely discussed (Lawrence and Dandy, 2014; Novais and Canadas, 2010). Specifically, we ask, in what ways might forest management need to change, to fit the needs, interests and abilities of new forest owner types? What degree of freedom do forest owners have to determine their management? What kinds of innovation are needed and what are possible barriers?

Scholars studying forest owners in the USA and Europe have emphasized the impact of changing motives, goals and objectives with their forest land (Butler and Leatherberry, 2004; Hogg et al., 2005; Stern et al., 2010). While a significant proportion of the forest land in Europe is managed by private owners with an active management interest in their forests, this is clearly not always the case (Kvarda, 2004; Niskanen et al., 2007; Urquhart et al., 2012; Wiersum et al., 2005). Alongside traditional forestry, new opportunities linked to alternative commercial use of forest land such as non-timber forest products and services are becoming more important, including tourism, recreation and eco-services (Nybakk and Hansen, 2008; Nybakk et al., 2009; Umaerus et al., 2013). Furthermore, a decline in income from timber harvesting has reduced reliance on forest revenues for many forest owners in several

European countries (Lunnan et al., 2006). Consequently, forest and agricultural strategies in European countries and the European Union increasingly evaluate the role of forests and their multifunctional management in rural development. However, while several studies have addressed topics linked to “new forest owners” with changing motives, goals and objectives with their forest land (Hogg et al., 2005; Schraml and Memmler, 2005), less work has been done on how an innovative and more flexible forest management can meet these new challenges.

When asked the question if we need new forest management approaches for new forest ownership types, silviculturalists often assume that their techniques are well developed for any kind of management goal. Owners would simply need to know the goal and foresters should then be able to apply the right forest management. When, however, putting the question into a broader management context and institutional setting, acknowledging that any forest management approach would depend on the broader context of the forest holding or forest owner, it seems that a huge number of factors actually impact the selection of an appropriate management solution. Understanding forest management broadly and including the definition of management goals, planning, forest work techniques and organisation, and marketing, there are many decisions to be taken which depend on the owner's knowledge, goals, abilities and further circumstances, including for example available technical assistance, advisory services, outsourcing opportunities, and peer pressure and other perceptions of behavioral control. From the observation that many of those contextual factors are currently changing, we must assume that new management approaches or business models are urgently needed (Kajanus et al., in this issue).

Forest management may be defined as the process of planning and implementing practices and operations aimed at fulfilling relevant environmental, economic, social and/or cultural functions of the forest and meeting defined objectives. The relevant practices and operations in forest management include silvicultural work such as planting, tending and harvesting, but go far beyond this operational level. The freedom of owners to decide on management planning varies largely in European private forestry (Nichiforel et al., 2018). In most of the westernised countries, forest management planning is not compulsory and is required only for specific situations (e.g., qualification for financial subsidies in Austria, Ireland and Scotland, or for clear-cuts over 5 ha in Wallonia). In other countries, forest management plans are required only if the size of property is above a certain minimum area. This minimal area varies according to the legal provisions and stretches from 10 ha (Romania, Poland), 20 ha (Switzerland), 25 ha (France), 50 (Czech Republic, Bulgaria) to 100 ha (FYR of Macedonia). In most of the SEE countries, forest management plans are always required, regardless of the size of the property and regardless the forestry works intended by the owner. Consequently, the type of silvicultural practices and operations implemented in private properties are still mainly under state control in most of the former socialist countries, while forest owners' empowerment is greater in the western countries.

Important decisions include not only selecting which technology but also how to implement it in the business context. This context ranges from large (industrial) forest holdings with their own staff and machinery to small-scale forest owners for whom the forest management is a side-activity, and to forest owners that do not have market-oriented management goals at all. Even for the latter, certain tasks may be necessary, e.g. for fulfilling tending or forest protection works that are required by law or for maintaining a stable or healthy forest for self-consumption or amenity purposes. How to implement whichever forest management, includes decisions on organisational models, business cooperation, marketing, and how to divide tasks between owners, authorities, advisory services or other external service providers.

All characteristics discussed under the previous section may influence the management types/goals. Central questions include:



- What will be produced? Will it be produced for self-consumption or for markets?
- How will it be produced? Is the work done by the owner themselves, their own staff, contracted out, done in cooperation with other owners or with the help of public advisory services?
- What are the preconditions regarding owner's own knowledge, skills, time resources, machinery and abilities to contribute to the decision making and implementation?
- What are the owner's preferences regarding own involvement in the decision making and implementation of works, profit and environmental orientation, the produced goods and services, the remaining forest structure after harvesting, and other uses of the forest?

These elements need to be considered in any solution for any single forest owner. With that question in mind, we quickly arrive at areas where our conventional models end. Only in certain regions (for instance, in Mediterranean countries) do management models for non-timber forest products exist; only a few experts may know how to manage forests for nature conservation goals or for recreational purposes; forest owners' cooperatives or service firms are not necessarily open to various owners' preferences and abilities to plan the tending or harvesting measures or to do some of the work; in practice, management models are rarely adaptable to economic just like ecological requirements.

Necessary innovations may include business innovations such as product, process, marketing and organisational developments (OECD, 2005) as well as institutional, policy or social innovations. It may be that the innovators are new forest owner types, but innovations may also be needed by other actors, including service providers, researchers, policy-makers, interest representatives, or in education, training, and advisory services (Lawrence et al., 2016). Non-traditional owners have the potential to develop new products or services because of their non-forestry living environment, lifestyle, values and skills (Ludvig et al., 2016a, 2016b; Živojinović et al., 2017). Process innovations such as electronic wood sales platforms, simplified planning methods, cost-efficient and usable information or communication tools, or all-inclusive forest management contracts necessarily involve external public and private service providers.<sup>5</sup>

New organisational offers for new forest owner types include clubs for urban forest owners, such as those emerging in Finland: finding their own types of activities to serve the needs of “absentee” but active or willing-to-learn owners in the cities (Hamunen et al., 2015). The Swedish forest owners' organisation arranges specific activities for “non-resident” members via their Stockholm office (Häggqvist et al., 2010). More far-reaching social innovations include “green care” developed in Austria, Norway, Finland and Sweden (Gallis, 2013; Haubenhofner et al., 2010; Sonntag-Öström et al., 2015; Umaerus et al., 2013). The new community woodlands in Britain are an interesting example since they emerged from civil society demands and initiatives (Lawrence and Ambrose-Oji, 2014).

In summary, we propose that new forest ownership types need new forest management approaches and management services that are more inclusively designed to feed specific value chains and implemented in value networks. Examples exist (Asikainen et al., 2014; Kronholm, 2015) but the idea still needs to diffuse across regions and adapt to local situations. The new approaches may face barriers if established groups or actors do not understand the need or even actively block their implementation. Rather than a technological challenge of choosing and following a new management strategy, there is a systemic transformation challenge. Advisory services seldom adequately address non-traditional forest owners (Stern et al., 2010; Lawrence et al., 2016). Buttoud et al. (2011) describe in several examples how established

interests are often able to fend off institutional innovations that would lead to new forestry practices.

Historically, silvicultural approaches have always been developed for certain needs and circumstances, and these need to be adapted or developed if management requirements change - whether through development of a specific management for new goods and services, or management practices adapted to the needs and circumstances of new owner types. For example, a new goal for the forest may be simply maintaining a stable forest with low cost measures.

## 6. Summary, research needs and conclusions

Our overview based on the in-depth work of FACESMAP demonstrates that the state of knowledge about forest ownership changes in Europe is quite limited. In most European countries a significant proportion of forests has recently undergone, and is still undergoing, transitions in owners' goals and behaviour; the qualitative and quantitative aspects of these transitions, however, are not so well known. Furthermore, typologies developed to analyse owners' behaviour are mostly incompatible (Ficko et al., this issue). Knowledge of the state and trends in forest ownership structures across Europe is limited to a few basic figures such as distribution of public and private ownership, or the number and size classes of forest holdings (Schmithüsen and Hirsch, 2010; FOREST EUROPE, 2015).

The European COST Action FP1201 “Forest Land Ownership Changes in Europe: Significance for Management and Policy” (FACESMAP) has aimed to fill some of these gaps, e.g. through the collection of systematic data in country reports (Živojinović et al., 2015), analyses of specific issues (e.g., Weiss et al., 2016, and many contributions to this Special Issue) and an improved forest ownership survey carried out together with UNECE/FAO (results expected for 2018).

To address these knowledge gaps, empirical studies are needed particularly to:

- i) gain better qualitative understandings of the various trends of ownership change including the drivers behind and the consequences on the ground;
- ii) quantify these trends, in particular the share of the affected forest land;
- iii) understand the influence of relevant policies on forest ownership changes and, vice versa, their effects on policy goals;
- iv) learn more about good practice cases and the effectiveness of specific policy instruments to reach new forest owner types;
- v) discover and develop appropriate management approaches that mirror changing goals of owners and changing environments for forest management.

To describe and understand the trends, we furthermore need systematic “monitoring systems”, based on repeated surveys administered every 5 or 10 years.

To improve the comparability of future studies, issues to do with basic definitions and concepts must be resolved. These include (i) understanding public vs private forest ownership as a characterisation of the ownership right, or as the entity owning the land, and (ii) inconsistent categorisations of a range of special forms of forest ownership, such as municipal, community, church and charity ownership. On the basis of our experiences, the introduction of a special category of “semi-public” (or alternatively, “semi-private”) ownership forms could be a purposeful way.

Taking a systematic overview of the many attempts to develop typologies of owners, we conclude that it is impossible to define a single common typology to be used by all research.

With regard to the term “new forest owners” we advocate clarity about distinguishing between new *owners* or new *owner types*: the former seems adequate when referring to the change of owners, the latter when talking about changing owners' backgrounds, goals and

<sup>5</sup> The open web-based forest innovation database which is run by the European Forest Institute includes examples for all types of innovations ([www.policydatabase.boku.ac.at](http://www.policydatabase.boku.ac.at)).

behaviour.

While changes in forest ownership patterns are indirectly influenced by societal developments (structural change of agriculture or lifestyle changes), some policies also have direct influences. They include restitution and privatization policies, which are primarily relevant in former socialist countries in East and Southeast Europe; and the 2003 Land Reform Act in Scotland, which created opportunities for rural communities to acquire forest land. Inheritance laws may allow, forbid or prescribe forests to be split among the heirs, to be inherited jointly, or to be given to only one heir as an entity. Furthermore, de-fragmentation policies in some countries aim to avoid fragmentation through for example land consolidation programmes, or new forms of joint forest ownership.

For new forest ownership types with different needs and circumstances, new forest management approaches need to be developed, ranging from silvicultural methods to organisational, planning, marketing and business models, as well as advisory services, and institutional and social innovations. Better support for such innovations would require strategic processes of systemic transformation, ideally accompanied by co-construction and experimentation activities involving practitioners, forest owners and researchers. It seems that among forestry actors a better awareness of goals and needs of non-traditional forest owners is needed and a new positive attitude towards non-traditional uses of forests. Our overview of the conceptual and empirical issues in studying forest ownership in Europe demonstrates that the subject deserves greater attention in studies dealing with forest policy or forest management. As we have shown, the subject is rich and merits recognition as a research field in its own right, and one that would benefit from conceptual rigour to make sense of diversity in practice context, research and policy.

### Competing interests statement

Authors have no competing interests to declare.

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