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Forest Land Ownership Change in Croatia

COST Action FP1201 FACESMAP Country Report



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

Forest Land Ownership Change in Croatia

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

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

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

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Background of the project

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

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

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

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

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

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

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

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

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

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Acronyms and abbreviations

CEPF	Confederation of European Forest Owners
CPR	Common-pool resources regime
CUPFOA	Croatian Union of Private Forest Owners Associations
EU	European Union
FACESMAP	Forest Land Ownership Changes in Europe: Significance for Management and Policy
FAO	Food and Agriculture Organisation of the United Nations
FES	Forest Extension Service
FMP	Forest Management Plan
HRN	National Standards for Wood Products
NIPF	Non-Industrial Private Forest Owners
NFP	National Forest Program
NGO	Non-governmental Organisation
PFOA	Private Forest Owners Associations
SEE	South East Europe

1. Introduction

1.1. Forests, forest ownership and forest management in Croatia

Total land area of the Republic of Croatia amounts to 56 594 km² out of which forests and forest land area account for 46%, thus making Croatia one of the countries with highest forest cover in Europe, while the share of forestry sector in GDP is 1.5% (UNFAO, 2014). According to the National Forest Inventory (2010), total size of forests and forest land area in Croatia is 2 580 826 ha, of which 1 987 799 ha (78 %) is state owned and the rest of 593 027 ha (22%) is privately owned. Majority of state owned forests are managed by Croatian Forests Ltd. company. Forests in Croatia are sustainably managed according to 10-year management plans. All state forests are FSC certified from 2002.

1.2. Overview of the country report

Report is based on several methods applied - literature review, expert knowledge and case studies, while quantitative information on forest cover and forest ownership was collected from available forest inventory data.

In Croatia there is a modest knowledge base on private forests and private forest owners based on scientific literature, but lately the situation is improving mainly as a result of several international projects. Main themes based on literature review are policies and policy changes related to private forestry, while the most common method was quantitative survey questionnaire. Theoretical frameworks applied in analysed literature is based mainly on rational choice economic theories, hence deeper understanding of motivation and behaviour of private forest owners is still missing. Future research needs include effect of existing policies on private forest ownership and new types of private forest owners; studies on effectiveness of new management business models and their impact on sustainable forest management of private forests; and qualitative studies on motives and behaviour of private forest owners.

In Croatia there are two types of forest ownership - public and private. The exact amount of public and private forests varies according to the methodology, but generally 22% of total forest and forest land area is privately owned. There is also a small amount of communal forests that are not legally recognized. Recently a new trend is emergence of new big private forest owners, mainly due to the restitution process, where bigger properties taken during communist regime are returned to previous owners or their successors (mainly Church and nobility). Other outcome of transition from a centrally planned to market economy is a privatization of public forest management that resulted in 392 licensed companies providing forestry services (mainly wood extraction), in the register of the Croatian Chamber of Forestry and Wood Technology Engineers (status on 16 April 2015).

Sustainable forest management in Croatia has tradition longer than 250 years and is regulated by several laws and other legal acts. Publicly owned forests are managed by Croatian forests Ltd. company (98%) or other public institutions (2%), while private forest owners are responsible for managing their own forests. Forests should be managed according to 10-year forest management plans, which do not exist for about one third of private forests. Establishment of private forest owner associations is considered as innovative approach to management of private forests since it provides opportunity for private forest owners to manage their forests in collaboration with other private forest owners. Two new business models with regard to forest management are identified at the moment. According to one business model company pays rent to the owner for forest management and in the other model private forest is managed by forestry contractor paid by the owner. Main opportunities for innovative private forest management are also recent democratisation of private forest owners' rights according to which private forest owners have possibility to choose forestry contractor and positive attitude of part of private forest owners towards engaging themselves in energy wood production and cooperation on forest road

construction according to literature review. However, obstacles for innovative approach to forest management are small-scale forestry, poor cadastre and land registry, unsolved property rights in some cases. Additionally, private forestry development is slow due to insufficient road infrastructure, absence of open market, and missing management plans for about half of private forests.

Forest policy certainly made an impact on establishment of new private forest owner types and private forest property in general. Restitution process started in 1996 and is still ongoing even though it is slow. National Forest Policy and Strategy in 2003 made a foundation for many other policy changes affecting private forests and private forest owners, such as Law on Forests in 2005, establishment of Forestry Extension Service for private forest owners and Croatian Chamber of Forestry and Wood Technology Engineers in 2006, and the most recently re-establishment of the forestry extension

service within the Advisory Service in 2014 after several years operating within Croatian Forests Ltd. with a limited power. Establishment of the Forestry Extension Service in 2006 positively affected establishment of private forest owner interest associations over time. However, there are some obstacles for innovation in policies, such as lack of accurate ownership register and cadastre, missing forest management plans for some private forest and certain amount of private forests that still need to be given back to previous owner. Furthermore, existing National Forest Policy and Strategy is redundant, and new is still missing. Private forest management plans sometimes cannot be implemented due to unclear ownership and property fragmentation. However, legal regulations threat all private forest owners equally regardless of the size of their property, even though owners may not be interested in forest management or do not have capacity and knowledge to implement forest management plans.

2. Methods

2.1. General approach

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

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

2.2. Methods used

For the purpose of writing this report a mix of appropriate methods was applied. The starting point was literature review of all relevant publications related to private forests and private forest owners in Croatia, including both scientific and professional publications, as well as review of relevant laws and regulations in the last 20 years (1994-2014). Quantitative information related to forests was found in the General Forest Management Plan (2006-2015) (Croatian Forests Ltd., 2006), the National Forest Inventory (Čavlović, 2010), and the FAO Forest Resource Assessment (UNFAO, 2010). Data on status of private forest ownership and behaviour of private forest owners is based on two regional research studies conducted within the timeframe of the PRIFORT (Glück et al., 2010) and WESSPROFOR project. Expert knowledge was used for description of case studies, information about ongoing initiatives of associations of private forest owners and identification of issues and obstacles for private forest owners.

3. Literature review on forest ownership in change

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

The scope of the literature review is as follows:

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

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

3.1. Research framework and research approaches

The most important literature related to private forest owners and private forestry in Croatia includes only seven publications as a result of the weak coverage of this topic by the Croatian scientific community.

3.1.1. Main themes covered by the selected studies

Main themes of selected studies are policies and policy changes related to private forestry (Carvalho Mendes et al., 2011; Avdibegović et al., 2010a; Lovrić et al., 2009; Paladinić et al., 2008), motivation and behaviour of private forest owners (Halder et al., 2014; Glück et al., 2010; Avdibegović et al., 2010b) and current status of private forest ownership (Lovrić et al., 2009; Paladinić et al., 2008).

3.1.2. Types of organizations conducting the researches and funding types

Majority of studies are results of collaboration between researchers from universities and public research institutes (Halder et al., 2014; Glück et al., 2010; Avdibegović et al., 2010a; Avdibegović et al., 2010b; Paladinić et al., 2008) who were prevalingly interested in motives and behaviour of private forest owners. Two publications are written by university researchers exclusively (Lovrić et al., 2009) on the topic of forest management; and one book chapter (Carvalho Mendes et al., 2011) is a result of the pan-European collaboration between participants of the COST action E51 "Integrating innovation and development policies for the forest sector" on the topic of ownership and policy changes. Analysed studies were mostly conducted on European/cross-national level and were funded by European public funds. Only three studies were nationally funded (Lovrić et al., 2009; Paladinić et al., 2008). Six out of seven studies are cross-national in scope with only two being national (Paladinić et al., 2008).

3.1.3. Theoretical and methodical approaches

In majority of studies theoretical framework resting upon several theories were employed. The most common were Olson's theory of collective action (in Carvalho Mendes et al., 2011; Glück et al., 2010; Avdibegović et al., 2010a; Avdibegović et al., 2010b) and critical

mass theory (Marwell and Oliver, 1993) (in Carvalho Mendes et al., 2011, Glück et al., 2010 and Avdibegović et al., 2010b), followed by the theory of pluralism (Truman, 1951) and exchange theory (Salisbury, 1969) (in Glück et al., 2010 and Avdibegović et al., 2010b). The theory of planned behaviour (Ajzen, 1991) was used in one study (Halder et al., 2014). The selection of theories in analysed studies corresponds with the prevailing topic of motivation and behaviour of private forest owners.

Quantitative survey questionnaire was used in three studies (Halder et al., 2014; Glück et al., 2010 and Avdibegović et al., 2010b), while only two studies applied qualitative methods and approaches (Carvalho Mendes et al., 2011 and Avdibegović et al., 2010a), namely case studies and qualitative in-depth interviews with key stakeholders respectively. Two papers are review studies and applied method of literature review (Lovrić et al., 2009; Paladinić et al., 2008).

3.1.4. Major results and insights

Results of the analysed literature showed that private forests owners in Croatia deal with numerous problems as a result of political neglect of private forest ownership over long period of time: small and scattered ownership, usually owned by several owners, which make difficulties in managing forests in an economically sustainable manner (e.g. Halder et al., 2014, Glück et al., 2010; Lovrić et al., 2009). Policy changes are considered as major driver of change in the last 20 years which enabled establishment of associations of private forest owners and hence new approach to private forest management and occurrence of new types of private forest owners (e.g. Carvalho Mendes et al., 2011). These policy changes include process of restitution (Paladinić et al., 2008), new forest legislation in 2005 that provided bases for establishment of the Forestry Extension Service in 2006 who would work on providing advisory services and incentives for certain activities in private forests (Carvalho Mendes et al., 2011; Lovrić et al., 2009; Paladinić et al., 2008) and which gave an impetus to establishment of increasing number of associations of private forest owners and increased percentage of private forests covered by forest management plans (Lovrić

et al., 2009; Paladinić et al., 2008). Additionally, importance of critical mass of engaged and entrepreneurial private forest owners is acknowledged (Glück et al., 2010). Results of quantitative studies showed that majority of them are willing: to join PFOAs (Glück et al., 2010), to cooperate with other PFOs (Glück et al., 2010; Avdibegović et al., 2010b) and to produce energy wood (Halder et al., 2014), but often under certain circumstances, like provision of financial support or existence of stable energy wood market.

3.1.5. Critical assessment, gaps and future research needs

Several papers address PFOs and relevant policy changes in Croatia (Halder et al., 2014; Glück et al., 2010; Avdibegović et al., 2010a; Avdibegović et al., 2010b). These papers are based on studies conducted within the timeframe of the PRIFORT project (2008-2009) (Glück et al., 2010; Avdibegović et al., 2010a; Avdibegović et al., 2010b) aiming at the investigation of readiness of private forest owners to join interest associations in SEE countries (Bosnia and Herzegovina, Croatia, Macedonia, Serbia) and RoK-FOR project (2011-2013) (Halder et al., 2014) which partly addressed the topic of sustainable forest management for the purpose of forest biomass production, including analysis of policy environment for mobilisation of forest biomass from public and private forests in Croatia and Serbia. Another recent scientific project was WESSPROFOR (2011-2013) that addressed attitudes of private forest owners to engage themselves in forest biomass production. However, the manuscript preparation for publishing in international peer-review journals as a result of this project is still ongoing.

Theoretical frameworks applied in analysed literature is based mainly on rational choice economic theories, where main goal is maximisation of profit, hence deeper understanding of motivation and behaviour of private forest owners that might be beyond economic benefits (e.g. nature conservation goals) is still missing.

The representativeness of the survey results on the national level is hard to achieve since there is no accurate list of private forest owners in Croatia and there are also regional

differences in the share of private forests. For instance, PRIFORT project put focus only on regions with the significant share of private forests. Two review papers give a good overview of the status of private forest ownership and related policy changes in Croatia at the time they were published (Lovrić et al., 2009; Paladinić et al., 2008). More recent information is missing.

There is lack of information related to private forests and private forest owners such as register of private forest owners where all owners are listed up; up-to-date cadastral information related to private forests; forest management plans, including forest inventory data, are still missing for some private forests (not all are covered by forest management plans).

Future research needs: studies on effect of existing policies on private forest ownership and new types of private forest owners; studies on effectiveness of new management business models and their impact on sustainable forest management of private forests; and qualitative studies on motives and behaviour of private forest owners.

3.2. New forest ownership types

In cited literature there is no available data on forms of new or non-traditional forest ownership. However, several studies made attempt to provide typology of private forest owners in Croatia with regard to readiness to join associations of private forest owners (Glück et al., 2010, attitudes towards energy wood production (Halder et al., 2014) or readiness to cooperate in forest road construction and maintenance (Avdibegović et al., 2010b). In the study made by Glück and others (2010) three groups of private forest owners in Croatia were identified- 'drivers' (20%), 'supporters' (48%) and free riders' (32%). Drivers could be considered as new type of private forest owners, those who are willing to engage themselves more in forest management and are ready to cooperate with other private forest owners in all kinds of forest management activities, especially when having in mind that the majority of private forest owners in Croatia are being passive with regard to their ownership. Study by Avdibegović and others (2010b) shows that private forest owners are

mostly willing to cooperate in forest road construction and maintenance (45% of respondents). Halder and others (2014) differentiate between two groups of private forest owners - 'institutionalists' and 'enthusiasts'. The former are of positive about higher role of public and private forestry institutions in provision of the positive environment for energy wood production, while the latter are those inclined to planting short rotation and exotic trees, as well as cooperating with other private forest owners. Furthermore, the restitution process could lead to higher share of private forest owners with larger private forest properties (Avdibegović et al., 2010; Paladinić et al., 2008) and this potentially leads to occurrence of new types of private forest owners. Paladinić and others (2008) mentioned that 2-3% of total area of private forests were returned to previous owners by process of restitution and that there is still ongoing restitution process for 300 000 ha of forest, of which there are individual requirements for even more than 100 ha.

3.2.1. Urban, absentee and non-traditional or non-farm owners

In cited literature there is no information related to share of urban, absentee, and non-traditional or non-farm owners.

3.2.2. Difference between "new ownership" from traditional ownership

There is no information in selected papers about what distinguishes "new ownership" from traditional ownership, in terms of structural attributes, outputs, goals and management or what distinguishes these "new ownership forms" from traditional ownership with respect to motives for ownership and management practices.

3.3. Forest management approaches

The study by Glück and others (2010) showed that vast majority of private forest owners (90%) in Croatia use their forest for energy wood production for domestic use, much less number of private forest owners

use forest for saw logs production again for domestic use (27%), industrial wood for sale (16%), energy wood (including charcoal) for sale (14%), hunting (6%), nature conservation (6%), non-wood forest products (5%) and tourism (1%).

3.4. Policy change / policy instruments

Policy changes are considered as major driver of change in the last 20 years which enabled establishment of associations of private forest owners and hence new approach to private forest management and occurrence of new types of private forest owners (e.g. Carvalho Mendes et al., 2011).

3.4.1. Specific policy instruments and their effect on new ownership types

Policy changes include process of restitution (Paladinić et al., 2008), as a result of Law on compensation for the property expropriated during Yugoslav communist rule (1996), new forest legislation in 2005 that provided bases for establishment of the Forestry Extension Service in 2006 who would work on providing advisory services and incentives for certain activities in private forests (Carvalho Mendes et al., 2011; Lovrić et al., 2009; Paladinić et al., 2008) and which gave an impetus to establishment of increasing number of associations of private forest owners and increased percentage of private forests covered by forest management plans (Lovrić et al., 2009; Paladinić et al., 2008). Additionally, importance of critical mass of engaged and entrepreneurial private forest owners is acknowledged (Glück et al., 2010).

According to Paladinić and others (2008) about 20% of the Green Tax in Croatia is used annually for supporting private forest owners in forest management activities. The Green Tax as an economic instrument was established already in 1980s to support management of forests on karst (high value in ecosystem services, but the low value of wood) in the Croatian Mediterranean area, but the actual implementation started in the early 1990s when it became obligatory to

economic subjects to pay certain amount for forest ecosystem services (0.07% of their annual turnover) (Vuletić et al., 2010). Today, according to Law on Forests (amended in OG 25/2012) and Rulebook on Method of Calculation, Forms and Deadlines for Green Taxes Payments (OG 84/2010 and 39/2012) the amount for forest ecosystem services decreased to 0,0265% of annual turnover. It is purposefully spent and one of the purposes is providing funding for elaboration of forest management plans for private forests. Forestry Extension Service provides funding for private forest management plans, does the allocation of wood for cutting, supports establishment of private forest owner associations and private forest property consolidation (Paladinić et al., 2008). Another policy changes include Rulebook on the register of private forest owners in 2006 by the relevant ministry, establishment of Croatian Chamber of Forestry and Wood Processing Engineers in 2007 (Paladinić et al., 2008).

The presence of the Forestry Extension Service caused the increase in number of private forest owner associations from only six in 2006 to 18 in 2008 (Paladinić et al., 2008) and 36 by the end of 2009, including two umbrella associations on the county level and establishment of umbrella organisation on the national level in 2008 (Lovrić et al., 2009).

3.4.2. Challenges derived from policy changes and instruments

According to Lovrić and others (2009), the precondition for getting a financial support for implementation of forest management activities, is that PFO is in the Register of private forest owners. Due to unclear ownership in some cases and inability of some owners to prove their ownership, not all owners fulfil legal requirements to be registered which prevent them from getting incentives. The main issue for some private forest owners is still unfinished process of restitution (Paladinić et al., 2008). However, there is no study so far that addresses effect of policy changes on private forest owners and management of private forests in Croatia.

4. Forest ownership

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

4.1. Forest ownership structure

4.1.1. National data set

Majority of forest areas in Croatia are publicly owned (Croatian Forests, 2006). Croatian Forests Ltd. company manages state owned forests. In the Republic of Croatia almost one quarter of all forests and forest lands belong to private forest owners (Table 1A in Annex).

According to the results from the first National Forest Inventory in Croatia measured in 2010 (Čavlović, 2010), forest and forest land in Croatia cover 2 580 826 ha or 46% of total inland area. Forest area in state property is 1 987 799 ha, private forests cover 593 027 ha, or 22% of total forest land in Croatia. Total growing stock is 552 146 000 m³, from that growing stock in private forests is 85 143 000 m³.

4.1.2. Critical comparison with national data in FRA reporting

The public forest ownership data are changing due to the restitution process. After the year 2005 some forest areas were returned to the Church. A rise in proportion of private forests could be explained with a new valid Forest Management Plan in 2006 and returning of nationalised forest areas to the

previous owners. The result between information provided by National Forest Inventory (2010) and information provided in FRA (UNFAO, 2010) (Table 2A.) may be also due to different methodologies. Information for FRA 2010 is provided from the General Forest Management Plan (2006-2015) based on information collected by Croatian Forests Ltd. company by using different methodology.

4.2. Unclear or disputed forest ownership

Situation between state and private owned forests is clear, but there are some problems with missing updates in land ownership register and cadastre. There is only one small area where forest ownership is disputed (ownership type called *komunele*). This is due to the fact that in Yugoslavia until 1990 there was a status of community forest ownership, and national forest legislation of the Republic of Croatia does not recognise this ownership category. Also there is a problem of proving the ownership over this area since ownership documents in many cases are missing. There is ongoing legal process over the forest and pasture areas on the mountain Čičarija in Istria between the state and several villages (Čalić Šverko, 2008 & 2013).

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

The legal restrictions are only for publicly owned forests and they cannot be sold (according to the Constitution and Forest Act) but they can be given in long – term leases for the purpose of establishment of golf courses or tourist camps. Private forest can be bought or sold without any restrictions. Pre-emption right exists in case of selling forests within national parks according to the Law on Nature Protection (OG 80/2013). In that case private forest owner must offer the property first to the state (Articles 165-166).

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

According to the Inheritance Law (OG 48/2003, 163/2003, 127/2013) there is no restriction imposed on inheriting forest land in terms of the minimum size of forest property that cannot be further divided. This means that all children of the PFO can inherit the forest property.

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

4.4.1. Changes between public and private ownership

Ownership structure between public and private ownership has changed on behalf of private owners because of the restitution process that is still ongoing. Until 2014 approximately 30 000 ha was returned to private owners based on expert information.

4.4.2. Changes within public ownership categories

Ownership structure within public ownership categories has not changed. All public forests are still owned by the State. State owned company Croatian Forests Ltd. manages 98 % of these and other 2 % is divided among several public institutions (mostly nature protection areas, Croatian Waters Company, Croatian Electricity Company).

4.4.3. Changes within private forest ownership

Ownership structure within private forest ownership has changed in the way that new big owners are appearing due to process of restitution and in some cases they sell their forests to other private owners or business entities according to expert information. However, there is no information on the size of the area bought or sold.

4.4.4. Main trends of forest ownership change

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

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

The most significant trends in forest ownership are restitution of the forest land, privatization of public forest management, while less important trends are new forest owners who have bought forests and changing lifestyles, motivation and attitudes of forest owners (Table 1.).

Table 1: Trends in forest ownership in Croatia

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

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

CASE STUDY 1: RESTITUTION PROCESS

Restitution process in Croatia is still ongoing and is regulated by the Law on compensation for the property expropriated during Yugoslav communist rule (OG 92/1996, 39/1999, 42/1999, 92/1999, 43/2000, 131/2000, 27/2001, 34/2001, 65/2001, 118/2001, 80/2002, 81/2002). The regulation is explained more in detail in the Chapter 4. Restitution of these forests is significant because it opens possibilities for sustainable management and entrepreneurship in private forests. In 2008 Paladinić and others wrote that only 2-3% of private forests are returned to previous owners due to restitution and that some estimates showed that another 300.000 ha will be subject to restitution. So far there is no publicly available information on how much forest area still needs to be returned to previous owners. According to experts opinion so far about 30 000 ha of forest is returned to previous owners.

CASE STUDY 2: PRIVATIZATION OF PUBLIC FOREST MANAGEMENT

The Law on Forests (2005) prescribes that private forest owner can perform manual labour related to habitat preparation, reforestation, thinning, logging and other types of labour for which he/she is qualified. The types of activities for which private is not qualified must be performed by a licensed forestry contractor. The process of licensing is prescribed by the Ordinance on issuing, renewal and revoking of licenses for operations in forestry, hunting and wood processing technology.

The process of licensing of private contractors in forestry of Croatia began by 1 October 2007. According to Landekić and others (2011) 356 companies of different kinds have been licensed, out of which 80.34% are active and 19.66% had their license revoked due to their non-compliance to the conditions of the license conditions. From the 286 active companies that have complete or partial license for at least one of the nine types of forestry operations, 229 of them (80.07% of all active companies) have license for harvesting and 135 licenses (47.20% of active companies) have been issued for performing of silvicultural operations. Companies registered as sole proprietorship mostly are holders of licenses for operations of direct forestry production (harvesting and silviculture), and the companies registered as a limited liability(Ltd.) have triple number of licenses related to tree marking, urban forestry, management of private forest estates and for making forest and hunting management plans.

In the period 2000-2010 there is an increase in the share of private contractors in the fields of felling, hauling, skidding and transport of lumber. The activity of private contractors n felling within the same period has doubled from 10.81% to 23.77%. Their share in hauling and skidding is held at a constant rate (41.83%), which means that Croatian Forests Ltd. have performed 58.17% of the respective activities. The share of private contractors in the transport of logs in 2010 was 83.53%, which represents an increase of 15.34% with respect to year 2000. The activity of private contractors in private forests is not documented, so there is no concrete data on the timber volume which is felled, hauled and transported from the private forests (Landekić et al., 2011).

CASE STUDY 3: NEW PRIVATE FOREST OWNERS WHO HAVE BOUGHT FORESTS

In some cases, but not very often, new private forest owners buy additional forest area from other owners to expand and consolidate their property.

CASE STUDY 4: CHANGING LIFE STYLE, MOTIVATIONS AND ATTITUDES OF FOREST OWNERS

Some rural areas in Croatia are depopulated and especially young people are leaving to pursue education and jobs in cities. They usually stay there and do jobs that are not related to agriculture or forestry. At the same time population in rural areas is getting older. The result is that forests and agricultural lands in these areas are abandoned.

4.5. Gender issues in relation to forest ownership

There is no information on national level about the number of forest owners according to gender. However, according to the results of the most recent project related to PFOs in Croatia, vast majority of private forest owners are males (93.1% of interviewees based on the sample size of 350) (Source: WESSPROFOR project, unpublished data).

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

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic (“Characterized or motivated by philanthropy; benevolent; humane” OED) organisations.

The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which

are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding. In Croatia only two types of ownership exist- public or private. There is no charitable, NGO or not-for-profit forest ownership (Table 2).

Table 2: Forest ownership in Croatia

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

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years

mainly in Scotland, Wales. Our interest in "traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning, etc.) are the key for sustainable use of CPR regimes.

However, there are no CPR regimes in Croatia.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Croatia

5.1.1. Who is who in forest management in Croatia?

There is more than 250-year long forestry tradition and organised sustainable forest management in Croatia. At the present, forest management and other forestry activities are regulated by several laws and legal acts, such as Law on Forests (OG 140/2005a), Forest Management Rulebook (OG 111/2006), Law on Physical Planning and Building (OG 76/2007), Law on Nature Protection (OG 110/2007), Law on Forest Planting Material (OG 75/2009), Law on Fire Protection (OG 92/2010). In the actual management of state forests, a state owned company Croatian Forest Ltd. (in Croatian, *Hrvatske šume d.o.o.*), has a key role. The company is obligated by the Law to make detailed Forest Management Plans (FMP) and to keep a precise book keeping of growing stock for every Forest Management Unit (FMU) (OG 140/2005a, 111/2006). The average size of FMU is around 3000 ha (Croatian Forest, 2006). FMP for each FMU has to be renewed every 10 years on the basis of data from the previous FMP and forest measurements with the intensity of up to 10% of the area. FMP contains data (area, forest and soil type, site index, DBH, growing

stock and increment for main tree species, etc.) for every forest compartment along with the plan of activities. Results of activities and volume of extracted wood are regularly noted in the FMP and updated to the company's central database.

All State owned forests which are managed by the Croatian Forests Ltd are certified according to FSC certification standard. The company Croatian Forests Ltd has been actively involved in the process of certification since 2000. At the beginning, only respective Forest Administrations had been certificate holders (since 2002), and later the whole area managed by Croatian Forests was subjected to the certification monitoring, on which basis a mutual certificate for the whole group consisting of 15 members (Forest Administrations) was issued. The unique COC number is SA-fm/coc-1212 and it is valid for all forest administrations. It can be also referenced by all wood processors down the chain of custody who obtained the raw material from Croatian Forests Ltd. The use of FSC certificate, FSC logo and COC number is subject to strictly regulated FSC rules and its abuse is forbidden (Croatian Forests, 2008).

Croatian Forests Ltd. is also in charge of developing a General Forest Management Plan (FMAP) on the national level every 10 years. The FMAP is made by compiling and summarizing data from existing FMPs for the state owned forests and data available for private forests. The FMAP for the Period 2006-2015 is a comprehensive document containing past and present status of forests in Croatia with a plan of activities for the period of 10 years (Croatian Forests Ltd., 2006). The Ministry of Agriculture gives approval for the FMP as well as forest management plans of private forests.

Forestry Extension Service as an independent agency existed from 2006 until 2010 when it became a unit within the Croatian Forests Ltd. company. From 2014 the extension services are moved again from the Croatian Forests Ltd. company to independent agency that was established as a result of merging forestry and agricultural

advisory services in one agency.

According to the statute of the established Advisory Service at the Ministry of Agriculture the role regarding forest management of private forests is: participation in forest fire protection in private forests, collecting the data about the forest fires, recommendations for new seedlings purchase and reforestations, preparation of documents for forest roads and forest fire brakes infrastructure building, organise and prepare public procurement for biological reproduction work according to the law regulation (Statute of Advisory Service, Ministry of Agriculture, 2014).

The fragmentation of forest ownership is the main reason that bigger forest area is not elaborated and approved by the Ministry resulting only in small area of private forests covered by forest management plans while the rest remains unmanaged (Posavec et al., 2011). In recent years about 70% of private forests area has approved forest management programmes according to expert opinion. The goal is to have all private forests covered by 2018.

Main national bodies involved in forest planning and management are Ministry of Agriculture, State Institute for Nature Protection, and the Ministry of Environmental and Nature Protection. The Ministry of Agriculture with its forestry department is monitoring body and forest company Croatian Forests Ltd. is accountable to this Ministry. The role of the Ministry is quality assurance in terms of assessment and giving approval to forest management plans developed by Croatian Forests Ltd. Company.

State Institute for Nature Protection is a state body who issues approvals for forest management activities in protected areas based on request by the Ministry of Environmental and Nature Protection. The State Institute for Nature Protection developed proposal for NATURA 2000 sites in a consultation process and carried out tendering activities related to NATURA 2000 project in Croatia. Percentage of forests and forest land covered by NATURA 2000 is 36.22% (broadleaves 25.58%, coniferous 2.57% and mixed 7.65%), and 29.38% of total surface in Croatia (25.959,6 square km) (Martinić and Kerovec, 2013). There is still no

official data about the size of forest area covered by NATURA 2000 network.

Beside Croatian Forests Ltd. and its daughter company the Forest Biomass Ltd., there is also the Faculty of Forestry, University of Zagreb who is involved in forest management activities, but only of special purpose forests used for education and training of students. The Forest Biomass Ltd. is a sister company of Croatian Forests Ltd. which produces and sells forest biomass (wood chips) from wood bought usually from Croatian Forests Ltd. and puts it on the market.

5.1.2. Private forest owner associations (PFOAs) and their role in private forest management

The associations of private forest owners are non-governmental organisations (NGO). The first meeting of forest owners was held 2005 in Delnice (Posavec et al., 2011) which was the basis for setting up the private forest sector reform, and where key problems were highlighted.

The Croatian Union of Private Forest Owners Associations (CUPFOA) was established in 2008 whose role is representation of private forest owners associations (PFOA) on the national level and lobbying for private forest owners interests. Their main objective is to represent forest owners' interests on national level through collaboration with public institutions and participation in several professional committees which deal with forestry issues. The funding of the CUPFOA is based on membership fee, donations and project acquisition. CUPFOA cooperates with the PFOAs from the Western Balkan region and is a member of the Confederation of European Forest Owners (CEPF). Not all associations of private forest owners are members of umbrella association.

Basic PFOAs are small NGOs with up to 100 members and usually cover an area of one municipality. PFOAs are weak because private forest owners do not play an important role in the wood supply chain and for now they use their forests mostly for firewood, the reason why most forest owners are not more members of these associations according to expert opinion.

The role of PFOA's is to educate the members about sustainable forest management, to participate in the elaboration of forest management plans and to cooperate with local and national government. The main goals of PFOA's is the improvement in forest management, collaboration and exchange of knowledge and experiences; access to information; expert education; cooperation with public institutions; to enhance financial possibilities and the utilisation of incentives and other funds. PFOAs are usually working on the municipality basis and implement different projects (education, information, management plans, forest roads...).

5.1.3. Obligations of private forest owners regarding forest management

According to the Law on Forests (OG 140/05, Article 8), private forest owners should manage their forests with taking into account biodiversity and landscape diversity of their forests:

- maintain the natural composition of the forest and support autochthonous species
- strive to extend the rotation of economically important species where possible
- the location and structure of artificially established stands should encourage the protection and restoration of natural forests, and not increase the pressure on them,
- use autochthonous species for afforestation
- avoid cutting protected, rare and endangered species
- during harvest leave the required number of old and rotten trees
- cleaning and deforestation carried out in a manner that does not cause permanent damage
- establish a comprehensive monitoring in order to review trends of negative processes in forests that are threatened by drying and natural disasters
- support the traditional forest management system on appropriate habitats that forms a valuable

ecosystem, when economically feasible

- during the forest roads construction minimize the damage to the habitat, taking care of special geological and vegetation values.

According to the Ordinance of Habitat Types, Habitat Maps, Endangered and Rare Habitat Types and on measures for Conservation of Habitat Types (OG 7/06) forest owner should:

- conduct forest management in accordance with the certification procedure
- during the final felling leave small areas uncleared
- preserve open sites and forest edges
- ensure the extension of the cutting age of autochthonous species
- avoid use of chemical pesticides
- not afforested with alien species
- during harvest leave the required number of old and rotten trees
- make afforestation with autochthonous species

According to the Law on Nature Protection (NN 80/13), in protected areas it is forbidden to pick, collect, destroy, cut or uproot wild growing strictly protected plants and fungi.

5.1.4. State and private forest management

Most of the wood (logs) from the State forests is sold to the domestic wood processing industry through the (annual and) perennial agreements based on fixed prices from the Croatian Forest Ltd. price list for wood products (Croatian Forests 2012, 2013, 2014). Those prices had not been significantly changed for 10 years, and since 2012 the prices of all assortments have been corrected according to current market situation and new business policy of the company. Those market conditions lead to the fact that most of the industry is based on semi-processed wood for export instead on production of products with higher added value. Lately valuable wood assortments originated from state forests are advertised and sold on the international auctions (6.0 %, 3.6 % and 2.0 % of total amount of sold logs in 2011, 2012 and 2013 respectively) and are

achieving better prices (Croatian Forest, 2012, 2013, 2014). There are no officially published data on wood assortments sold from private forests. Croatian Forests Ltd. sells more than 1 million m³ of energy wood annually to the local population for heating purposes, and up to 100000 m³ to the Forest Biomass Ltd. for wood-chips production (Croatian Forest, 2012, 2013, 2014).

Decreasing trend of the number of employees in companies operating in wood-processing sector, furniture production and forestry sector has started in Croatia even before beginning of last global economic crisis. In order to increase employment in these sectors and to balance and regulate mutual relationship, Wood Processing Industry Association of the Chamber of Commerce and Croatian Forests Ltd. made an agreement in 2012. Based on this agreement Croatian Forests Ltd. developed the new business model allowing annual and several year contracts (up to 10 years) with domestic wood-processing companies and Croatian forests Ltd. for the purchase of raw wood material, based on defined terms, criteria and the rebate calculation system. According to the proposed model all the companies of wood-processing sector in Croatia have got ability and the right to access, under equal conditions, the signing and implementation of several year contract (Majnarić, 2013).

According to comprehensive analysis of forestry contractors and services provided to the company Croatian Forests Ltd. in the period 1998 to 2002 by Šporčić and Martinić (2004), forestry contractors have carried out around 14% of all tree-felling activities and around 44% of all wood skidding (calculation based on extracted wood volume). Also they have carried out some 10% of reforestation and afforestation activities and around 70% of all wood transportation for the company Croatian forests Ltd. The vast majority of forestry contractors' services were carried out in state forests. Service contracts have been contracted with forestry contractors each year for different implementation periods, from single day to annual contracts. The most common were short-term contracts with deadline for carrying out the services since 30

to 50 days. According the three Annual reports of Croatian Forests Ltd. (2011, 2012, 2013), the share of services provided by forestry contractors to the company has significantly increased, compared to results from Šporčić and Martinić (2004).

After the establishment of Forestry Extension Service in 2006, provision of forest management services by forestry contractors increased based on experts opinion.

In Croatia, typical forest owners harvest their forest by themselves and then sell the round wood to contractors who resell it to sawmills, and forest owners and entrepreneurs are connected mainly through informal information channels (RoK-FOR report, 2012). It is possible also for forest owners to sell wood from their forest as standing trees. Then the contractors harvest and sell wood products.

Classification of wood assortments is done according to the national standards for wood products (HRN). The complete process is based on the price list for wood products.

According to Halder et al. (2014a, 2014b), the majority of the non-industrial private forest owners (NIPF) in Croatia use wood from their forests for household heating, and the average yearly consumption of wood for such purpose is 12 m³. Similarly, the majority of the NIPFs also reported that they purchased energy wood from market and around 7% of them sold energy wood from their forests, while the study by Glück and others (2010) showed that the share of those who sell energy wood is 14%.

Usually private forest owners are not aware enough on wood products standards (HRN) and then they accept some average assortment prices. The problem is that forest owners get lower prices for the wood, benefiting sawmills and dealers with extra profits. This is a result of the lack of wood market, making quite difficult to define market prices for different type of wood.

The buyers are wood processing companies, and there is unknown number of intermediaries involved in the processes. The PFOAs are not involved in the selling process.

5.1.5. Funding of forest management in Croatia including private forests

Payment for ecosystem services in Croatia has been present for 20 years through the "Green Tax", an obligatory payment for all economic subjects registered in Croatia, in amount of 0.02625% of annual turnover (0.07% until 1st July 2010) (Law on Forests, OG 140/05; 80/2010).

This fund issued for improving forest management, especially for the ecological and social forest functions (and also for financing Forestry Extension Service work). It was also used for financing forest fires protection (building fire protection roads) and other non-profitable works in forest (first thinning, afforestation, forest protection, forest management plans, etc.). Advisory Service administers funds allocated for management of private forests (e.g. forest management plans) according to latest amendments to Law on Forests (OG 94/2014).

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

5.2.1. Emergence of new forest management approaches

Establishment of PFOAs is considered as a new cooperative approach to management of private forests since the role of PFOAs is to educate the members about sustainable forest management, to participate in making of forest management plans and to cooperate with local and national government. The number of PFOAs increased from only six in 2006 (Paladinić et al., 2008) to 48 today (status on 16 April 2015) (Ministry of Administration: Register of Association in the Republic of Croatia, 2005).

From the beginning of the restitution process in 1990's, a certain number of private forest owners have reclaimed large forest areas, e.g. members of nobility (Drašković family) and Catholic Church among others.

Two innovative business models appeared in the last 3-5 years for management of these large private forest areas. According to the

first business model, private forest is managed by companies who pay rent to the owner and according to the second model, licensed forestry contractors are paid by the owner for management of private forests. These business models will be explained more in detail as case examples in the end of the chapter.

Regarding silvicultural or technical approaches in forest management, there are no significant differences between those applied in state owned forests and those applied in privately owned forests for now according to expert knowledge.

5.3. Main opportunities for innovative forest management

5.3.1. Collaboration of private forest owners

The main opportunity for new and improved forest management in Croatia is possibility of small-scale forest management in collaboration with other private forest owners. According to expert estimates, private forest owner needs to have at least 300-400 ha of mixed forests as a consolidated property to be able to manage forest in sustainable and economically profitable way. Due to small size of the private forest property in Croatia, consolidation of ownership in cooperation with other PFOs will be necessary to establish conditions for sustainable and profitable forest management.

The new opportunity for new and improved forest management in private forests is given by the last amendments of Law on Forests (OG 94/2014). According to those amendments, the Advisory Service as a public agency is established for carrying out advisory services, related to improvement of forest management in private forests among other. The establishment of the Advisory Service is regulated by the changes and amendments of the Law on Agricultural Advisory Service (OG 14/2013).

The one of the opportunities for PFOs is that they will have possibility to choose which forestry contractor to hire for management of their forests, according to latest amendments to the Law on Forests (OG 94/2014).

Also the newly established Advisory Service will financially support and carry out activities on making new or revising existing forest management plans for private forests the same way as the Forestry Extension Service did before.

Another supporting factor for implementing innovative forest management approaches is positive attitude of part of private forest owners towards engaging themselves in energy wood production (Halder et al., 2014a) and positive attitude towards cooperation on forest road construction (Avdibegović et al., 2010b).

5.4. Obstacles for innovative forest management approaches

5.4.1. Forest legislation as main obstacle for innovative forest management approaches

Management approaches are regulated by Law on Forests (OG 140/2005, 94/2014). The Law on Forests (OG 140/2005) takes into consideration all forest properties regardless of ownership. Innovative or new forest management practices imply changes in management, but the Law on Forests and other relevant regulations prevent those in larger extent. Management changes are possible only to a small extent.

5.4.2. Other challenges for innovative forest management approaches

Main challenges in private forests are small scale forestry, heterogeneity of silvicultural forms, poor cadastre and land-registry, non-marked parcel border and degradation of forests (Čavlović, 2004). However, the most important challenge is **unsolved property-rights** because this is obstacle for consolidation of smaller properties, and prevents joining private forest owners into PFOAs.

Main challenges regarding the roundwood production in private forests are **insufficient road infrastructure** and **absence of open market** (Županić, 2011).

The necessary precondition for any forest management approach in private forests is to have approved forest management plan by the relevant Ministry. Hence, the Ministry of Agriculture and Forestry in 2008 initiated the process of making those plans coordinated by the Forestry Extension Service that was established in 2006. It was planned to have forest management plans for all private forests by the end of 2018, but due to policy changes the Forestry Extension Service ceased to exist as an independent agency leading to slowing up of planned activities so up to date **only about 70% of private forests are covered by forest management plans** according to expert opinion.

CASE STUDY 5: PRIVATE FOREST MANAGED BY CONCESSIONER WHO PAYS RENT TO THE OWNER

The restitution process in Croatia effectively started in 1996, when Croatian parliament passed "Law on Restitution/Compensation of Property Appropriated During Yugoslav Communist Rule". According to the law, Archdiocese Đakovo-Osijek became the owner of couple thousands of hectares of forests and forest land. Consequently, Archdioceses announced invitation to a tender, on which "Sunčane šume" Ltd. won 20-year-long, management concession rights. Together with the forests and the forest land owned by Archdiocese, "Sunčane šume" Ltd. manage couple hundred hectares of forests owned by the company itself, resulting in total of 8 900 ha of managed land (Sunčane šume, 2014).

Current business approach of "Sunčane šume" Ltd. is based on typical contract agreement model. Hence, the owner (in this case Archdiocese Đakovo-Osijek) grants land management rights to the contractor (in this case "Sunčane šume" Ltd.) in return for a fee.

"Sunčane šume" Ltd. is a private forestry company founded in 2010, based in Đakovo and employing 14 employees (Sunčane šume, 2014). At the moment, the company is mostly focused on traditional forestry. Therefore, company is performing tasks prescribed by management plan: stand tending, stand regeneration, harvesting, while gaining most of the revenue from wood assortments marketing.

However, apart from being licensed for forest management, company is licensed for numerous related activities, such as: game management and hunting, tourism services, catering and other (Sunčane šume, 2014.) This, together with the construction of biomass power plant in vicinity of Đakovo (Lešić Omerović, 2013) implies probable expansion of current business model and diversification of products and services portfolio.

CASE STUDY 6: PRIVATE FOREST MANAGED BY FORESTRY CONTRACTOR PAID BY THE OWNER

According to the Law on Forests (OG 140/2005) private forests are managed by forest management plan. However, a lot of small scale owners do not have required knowledge or technical abilities to perform these activities themselves. Therefore, there is a growing need for private contractors who provide this type of service.

As an example of this type of business approach serves "Faunus selva" LP (limited partnership), a small privately owned company (10-15 employees) based in Zagreb. "Faunus selva" LP offers services on implementing activities prescribed by management plan. However, the company does not conduct practical, field activities, since the company does not possess its own mechanization. Therefore they usually hire other licensed private contractors for performing the tasks in the field (e.g. harvesting and silviculture operations), while the company itself is supervising and dealing with legal, administrative and logistical aspects of the tasks. Moreover, apart from implementing forest management plan, the company is usually hired to market the wood assortments produced in these activities. Therefore, the company is also providing marketing services (e.g. finding the buyers, negotiating the price, arranging the contract, etc.). Lastly, it is important to note that the company is being paid only for the marketing service and not gaining revenue from the sales of wood assortments.

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

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

6.1. Influences of policies on the development of forest ownership

6.1.1. Specific policy instruments that stimulate privatisation, decentralisation or nationalisation of forests

The process of restitution in Croatia started with the introduction of the **Law on compensation for the property expropriated during Yugoslav communist rule** (OG 92/1996, 39/1999, 42/1999, 92/1999, 43/2000, 131/2000, 27/2001, 34/2001, 65/2001, 118/2001, 80/2002, 81/2002) and made a huge influence on the privatisation of forest area. According to this law private forest owner is entitled for compensation for the expropriated forest land (Article 15). Private forest land is returned to PFO as a rule (Article 20), and only in case of exemption to the rule private forest owner is entitled for compensation in money, stocks or shares (Articles 52-55). Private forest owners have right to submit their request for returning forest land to the State Attorney's Office with supporting documents (Articles 64-67). The problem with reclaiming forest land to previous owner(s) may occur in case when private forest owners do not have documents that support that they are owners or heirs of the forest property in question or if they received even insignificant compensation for their property in Yugoslavia. In 2008 Paladinić and others wrote that only 2-3% of private forests are returned to previous owners due to restitution and that some estimates showed that another 300.000 ha will be subject to restitution. So far there is no publicly available information on how much forest area still

needs to be returned to previous owners. However, the process of restitution enabled emergence of the new type of PFOs, some of which own large forest areas (e.g. Count Drašković, Catholic Church), taking into consideration the prevalence of small forest ownership in Croatia. In some cases new private forest owners emerge by buying private forests from several owners who reclaimed their property though the restitution process.

Another policy that affected development of forest ownership in a way of creating impetus for making better environment for private forests and private forestry is **National Forestry Policy and Strategy** (OG 120/2003). The goals marked in this Strategy enabled later policy changes reflected in the establishment of the specialised department for private forests at the Ministry of Agriculture, Forestry and Water Management in 2004, new Law on Forests (OG 140/2005) that prescribed establishment of the Forestry Extension Service (OG 64/2006) and Croatian Chamber of Forestry and Wood Technology Engineers (OG 22/2006). The National Forestry Policy and Strategy supports consolidation of private forest area and establishment of associations of private forest owners. First step towards that goal was made in 2004 with the establishment of the Department of Private Forests at the Ministry of Agriculture, Forestry and Water Management at that time. The basic aim of the Department was to offer professional and financial support to private forest owners for the purpose of managing private forest areas according to sustainability principles. Additional tasks of the Department included the monitoring of the state of private forests, suggesting measures for its improvement, supporting private owners associations, and collaboration with the bodies of the regional and local self-government units.

New **Law on Forests** was issued in 2005 (OG 140/2005) and for the first time defined obligations of private forest owners related to forest management (Articles 8-12). According to this law private forests are managed based on forest management plans (Article 9) and private forest owners are allowed to perform

less dangerous activities in their forests (Article 50). However, they are not allowed to cut trees that are not marked for cutting by authorised person (forestry professionals from the Forestry Extension Service at that time or later by forestry professional from the Croatian Forests Ltd. company) (Article 30) or to transport wood from the forest for personal consumption or market without issued permission (in Croatian *popratnica*) (Article 31). Furthermore, role of the Forestry Extension Service was defined (Article 68). Subsidies for improvement of the state of private forests, supporting establishment of associations of private forest owners and consolidation of private forest property are funded from the state budget and other available sources (Article 69). However, to get support and subsidies private forest owners must be registered in the Registry of Private Forest Owners at the Ministry.

However, the newest amendment to the Law on Forests (OG 94/2014) brought some significant changes related to private forests and PFOs in terms of higher rights of PFOs to make decision about their forests. Now PFOs can choose any legal person employing licensed forestry engineer to do the tree allocation for cutting, and previously it was done either by employees of Croatian Forests Ltd. company (before the establishment and after the closing of Forestry Extension Service) or employees of Forestry Extension Service in the period when it was active. The same is valid for issuing the permits for transport of trees.

Establishment of the Forestry Extension Service in 2006 certainly affected the increase in number of associations of private forest owners in Croatia and umbrella association in 2009 (namely Croatian Union of Forest Owners' Associations). However, Forestry Extension Services, as agency directly linked with the Ministry of Forestry, ceased to exist by the amendment to the Law on Forests (OG 124/2010), but majority of staff ended up as a special unit at the Croatian Forests Ltd. Company, now with limited budget and autonomy to continue with their advisory service for private forest owners. This was not taken well by some actors and was considered as indicator of regression of private forestry. Recently the government made a decision to put

Agricultural Advisory Service and provision of forestry extension services under the same umbrella and the agency is now called Advisory Service. The scope of the agency and services provided to private forest owners are described in the amendment to the Law on agricultural advisory service (OG 148/2013) and the latest amendment to the Law on Forests (OG 94/2014).

Establishment of the Croatian Chamber of Forestry and Wood Technology Engineers in 2006 affected forest management of private forests due to obligatory licensing of contractors who are providing services in forestry (usually wood extraction) and voluntary licensing of forestry and wood processing engineers (Law on Croatian Chamber of Forestry and Wood Technology Engineers, OG 22/2006).

6.1.2. Privatisation of state forests and the other way around

According to the Law on Forests (OG 140/2005) state forests may be excluded from the forest management only if it is in the interest of the state, e.g. for the purpose of building of public infrastructure (roads, energy plants, water provision facilities) (Article 51). Easement over the forest land (in Croatian *pravo služnosti*) may be granted for the purpose of establishment of golf courses or tourist camps according to the newest amendment to the Law on Forests (OG 94/2014). However, privatisation of state forests is not possible.

There is no legal restriction for private forest owners to sell their forests to the state. Croatian Forests Ltd. company sometimes buys off private forest land if it is located within the large forest area for the purpose of consolidation of forest area, usually in case when the private forest area is reclaimed by the process of restitution. However, there is no information on the private forest area bought off in this way so far.

Pre-emption right is applied on private forest property that is part of national park according to the Law on Nature Protection (OG 80/2013). In that case private forest owner must offer the property first to the state (Articles 165-166). Property rights may be limited or forest land may be a subject of expropriation if there is special interest of the

state for the purpose of nature protection (Law on nature protection, Articles 167-168).

Private forest owners are also entitled to sell their forests to other private forest owners or other parties. This certainly affected the establishment of new forest owner categories.

Private forests only under specific conditions can be changed into other land use according to Law on Forests (140/2005).

In the Inheritance Law (OG 48/2003, 163/2003, 127/2013) there is no restriction imposed on inheriting forest land in terms of the minimum size of forest property that cannot be further divided, which means it is not possible, at least for now, to stop private forest property fragmentation. Also there is no restriction on inheritance based on gender.

6.2. Influences of policies in forest management

6.2.1. Forest management planning and applying instruments

Private forests are managed according to forest management plans in a sustainable way according to the Law on Forests. The Law prescribes what is considered as forest management activities in both public and private forests. Elaboration, renewal and revision of forest management plans for PFOs are funded from the payment for forest ecosystem services (Law on Forests; Vuletić et al., 2010). It was done in the past by Croatian Forests Ltd. company, than during the period 2006-2010 Forestry Extension Service was issuing calls for contractors for provision of these services for PFOs, and with new amendment to the Law on Forests (OG 94/2014, article 8) Advisory Service is covering costs of elaboration, renewal and revision of forest management plans. Private forest owners are entitled for subsidies only if they are registered in the Register of the private forest owners at the Ministry of Agriculture (Article 69 of the Law on Forests). These subsidies include provision of regeneration material – tree saplings for forest renovation, support for tree roads building and establishment, public procurement for licensed contractors who would perform silvicultural activities in private forests, providing support and subsidies for capital investments of private forest owners.

One sort of subsidy is available also for those who are not registered. In this case private forest owner can receive service of tree allocation and those who provide service are paid from the payment for forest ecosystem services. However, according to the value of extracted wood, private forest owner must pay forest tax (in Croatian *šumski doprinos*).

Private forest owners have rights only to cut trees in their forests that are allocated by authorised person (licensed forestry engineer) and in order to transport cut wood from their forests either for personal consumption or for market, they need to issue a permit (in Croatian *popratnica*) according to Law on Forests. So far do not have to pay for the permit, but there is indication that the payment will start in 2015.

6.2.2. Compensation for restrictions in harvesting imposed by the state

According to the newest amendment to Law on Forests (OG 94/2014), if state wants to change category of private forest from regularly managed to protective or special purpose forest it can be done only upon the agreement with private forest owners. They are entitled to compensation for restriction imposed on forest management in their forests. Before the latest amendment to Law on Forests this sort of compensation for had not been foreseen.

6.3. Policy instruments specifically addressing different ownership categories

6.3.1. Establishment and the role of Forest Extension Service

Establishment of special department for private forests at the Ministry of Forestry in 2004, Forestry Extension Service in 2006 and new Advisory service in 2014 all served the purpose of providing advisory services and help to private forest owners in order to be able to properly manage their forests. These developments certainly got interested many owners who started to think about how to better use their property. Forestry Extension Service organised many courses and

trainings for private forest owners to inform them about their rights and obligations, to provide them with basic skills needed to perform simple activities in the forest in a safe way, promoted self-organisation of private forest owners in interest associations, etc. Now these activities are under the scope of the Advisory Service. Establishment of associations of PFOs also helped since PFOs got better access to information on their rights and obligations. At the moment 48 associations of PFOs are registered according to the Register of associations in the Republic of Croatia (16 April 2015). Also there are two umbrella associations, one at the national and one at the regional level. According to the Law on Forests improvement of the state of private forests and improvement of private forest management, encouragement to private forest owners to form interest associations especially for the purpose of land consolidation will be subsidised and supports for capital investments will be provided from the state budget and other sources, but only to registered private forest owners.

6.4. Factors affecting innovation in policies

6.4.1. Information needs

Information needs affecting innovation in policies are need for accurate land ownership and cadastre, forest management plans for about 30% of private forest area that are still missing and information on the amount of private forests that still need to be returned to original owners in the process of restitution.

6.4.2. Barriers in adaptation of forest policies to different ownership categories

Existing National Forest Policy and Strategy is redundant and new is missing. At the moment there is no strategic plan about the future direction for forests and forestry sector in Croatia regardless of ownership. This could be due to lack of political will to tackle these issues.

Due to shared and sometimes unclear ownership, forest property fragmentation and size of parcels, some private forest owners cannot implement forest management plans.

One of the barriers is also restrictive legal regulation – Law on Forests threatens all PFOs equally regardless of the size of their property.

Forest management plans are still missing for about 30% of private forest area and in this case private forest owners are limited in the activities they are allowed to perform (only sanitary cutting is allowed). However, having forest management plan still does not mean that private forest owners are actually interested in management of their forests.

Private forest owners sometimes do not feel obliged to ask for permission for cutting trees and transportation of wood from the forest if this is only wood fuel for personal consumption. This is considered illegal logging even though private forest owners are cutting trees in their own forests for personal consumption and regardless of the amount of wood extracted in this way. However, it is not possible to say the amount of wood extracted or how many private forest owners are performing such activities.

Process of restitution is still not finished and it is not possible to foresee its timeframe.

Stakeholder changes (jurisdiction over private forests in terms of advisory services and forest management switched several times in the last 10 years, from Croatian Forest Ltd. to Forestry Extension Service than back to Croatian Forests Ltd. and then back to Advisory service which slowed the process of improving the status and forest management in private forests.

Even though there is 48 owners' association of at the moment and two umbrella association (16 April 2014), it is hard to tell how many of these are really active in promoting their interests.

6.4.3. Positive factors affecting innovation in policies

Continuation of provision of advisory services and state support (including financial support) for private forest management is considered as important to help private forest owners to manage their forests in line with sustainable forest management.

State support for elaboration of private forest management plans is important since this is a starting point for any forest management activities in private forests according to

current regulations.

Private forest owners are invited to participate in public discussion on the content of the forest management plans which gives them a right to have their say. However, according to expert opinion, private forest owners are insufficiently using this opportunity. Recently

private forest owners were represented in the processes of drafting of forestry measures of the Operational Programme for rural development on the national level and in the process of the drafting of amendments to the Law on Forests which is considered as a positive step forward.

CASE STUDY 7: HISTORICAL DEVELOPMENT OF PRIVATE FOREST OWNERSHIP IN CROATIA BEFORE 1990s

One of the main characteristics of the territory of the present Republic of Croatia is that it was divided between different states and empires throughout the history. Accordingly, there were significant regional differences regarding legal regulations, which, together with the environmental differences, shaped different management practices, ownership pattern and overall status of forests. This fact has to be noted since it enables easier understanding of some of the facts described here, although it is less significant for the historical period considered in this chapter. Development of forest private ownership in modern sense can be discussed from middle of the 19th century onwards, when new types of ownership are emerging due to official abolishing of serfdom in 1848.

The "Royal Patent", issued in Croatia on 17th of May 1857, regulated that a squire or a landowner should hand over a part of the forests in his estate to the peasants, his former serfs. This marks the beginning of the present private forest ownership. In every village, forests obtained by the peasants through segregation were managed by the Land Community, (in Croatian: *zemljišna zajednica*) which had its own forest ranger, while surveillance was carried out by the municipal and regional forester (Glück et al, 2011).

However, this type of communal ownership was relevant only for the part of Croatia under the rule of civil government. At the time, parts of Croatia bordering with Ottoman Empire were under special military rule and were called Military Frontier (in Croatian: *Vojna krajina*). In Military Frontier all forests were state owned, population had rights on fixed amounts of fire wood and construction wood. After demilitarization of Military Frontier half of the forests remained state owned and other half was given to the population. These forests were governed by Estate Communities (in Croatian: *imovna općina*) which were formed according to the law from 1873. (Potočić, 1976). Estate Communities present type of communal ownership similar to the Land Communities. Members of Estate Communities were previous members of Military Frontier cooperatives¹, local administration, church and school communities. Main objective of Estate Communities was to meet the needs of its members for fire wood, construction lumber and pasture. Excess profit was used for support of local cultural and economic development (Hrvatska enciklopedija, 2014). Both Land Communities and Estate communities existed until the end of the Second World War when they were nationalised by the communist government of SFR Yugoslavia and only public and small scale private forest estates remained. In 1946 communist authorities nationalized most of the privately owned forests and all of the communal owned forests according to the Law on confiscation of property and implementation of confiscation (OG of the former SFR Yugoslavia, 61/1946).

Private forest ownership, before Second World War, existed only in parts of Croatia who were under the rule of civil government. Private forests were owned by small scale owners (peasants), large scale owners (mostly nobility) and Church. Private forests covered 425 000 ha or 27.7% of total forest and forest land area. Interestingly, in next 40 years area of private owned forests decreased for approximately 25% and amounted 327 000 ha, due to expropriation of the land under the Agrarian reform after the First World War (55 000 ha), selling of private forests to Land Communities and Estate Communities and transformation of forests to agricultural land (Potočić, 1976.).

¹ Military Frontier cooperatives were rural, single-house family communities or holdings with special legal status, characteristic for Military Frontier (Marković, 2009.)

CASE STUDY 8: FORMATION OF PRIVATE FOREST OWNER ASSOCIATIONS AS A RESULT OF POLICY CHANGES

Croatian National Forest Policy and Strategy (OG 120/2003) has recognized private forestry as having a good potential for wood production and for other services. As main obstacles are mentioned high fragmentation and small property size, while joining of private forest owners in associations is recommended as one of the solutions. One of the goals was to encourage consolidation of private forest holdings and the establishment of associations of private forest owners. One of the activities, within this goal, was the establishment of Forest Extension Service (FES). Main responsible institution for this activity was the Ministry of Agriculture and Forestry together with its partners: Ministry of Finance, existing forest associations and organizations and Croatian forests Ltd. As a result of new Law on forests (OG 140/2005) FES was established in 2006 by the Regulation on establishment of the Forestry Extension Service (OG 64/2006, 19/2010).

Before 2005 in Croatia existed only a few private forest owners associations, founded in north-western and western part of the country (Posavec et al., 2011). But legislative reforms and the activity of FES have brought considerable changes and a rising number of forest associations, so the number of associations in period of 10 years, from 2004 to 2014, increased from just a few to 48 according to the Register of associations in the Republic of Croatia (16 April 2015). FES played important role in communication between forest owners and forestry professionals which was considered as important turning point for private forests (Posavec et al., 2011). FES encouraged private forest owners to actively participate in the management of their property. However, it was abolished by the decision of the Croatian Government in 2010 (Amendment to the Law on Forests, OG 124/2010). It was re-established (Amendment to the Law on Forests, OG 94/2014) and it works now within the Advisory Service. According to The Law on Forests one of their duties is expert assistance and encouraging of private forest owners on the active involvement and establishment of private forest owners associations. In accordance with the Law on Associations (OG 74/2014) the association is defined as any form of a free and voluntary union of a number of natural or legal persons, for the purpose of protection of their interests and benefits which are in accordance with Constitution of the Republic of Croatia and laws, without the intention of generating profit.

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Constitution of the Republic of Croatia - editorial purified text (Ustav republike Hrvatske – pročišćeni tekst) (2014) The Croatian Constitutional Court [Online] Available from: www.usud.hr/uploads/Redakcijski%20prociscen%20tekst%20Ustava%20Republike%20Hrvatske,%20Ustavni%20sud%20Republike%20Hrvatske,%2015.%20sijecnja%202014.pdf [Accessed: 14 Nov 2014]

Decree on the Establishment of Forestry Extension Service (Uredba o osnivanju Šumarske savjetodavne službe), OG 64/06 (amended in 19/10)

Forest Management Rulebook (Pravilnik o uređivanju šuma), OG 111/2006 (amended in 141/2008)

Inheritance Law (Zakon o nasljeđivanju), OG 48/2003 (amended in 163/2003, 127/2013)

Law on Advisory Service (Zakon o Savjetodavnoj službi), OG 50/2012 (amended in 148/2013)

Law on Associations (Zakon o udrugama), OG 74/2014

Law on Confiscation of Property and Implementation of Confiscation (Zakon o konfiskaciji i o izvršenju konfiskacije), OG of the former SFR Yugoslavia 61/1946

Law on Establishment of Croatian Chamber of Forestry and Wood Processing Engineers (Zakon o hrvatskoj komori inženjera šumarstva i drvne tehnologije), OG 22/2006

Law on Fire Protection (Zakon o zaštiti od požara), OG 92/2010

Law on Forest Planting Material (Zakon o šumskom reprodukcijskom materijalu), OG 75/2009 (amended in 61/2011, 56/2013, 14/2014)

Law on Forests (Zakon o šumama), OG 140/2005 (amended in 82/2006, 129/2008, 80/2010, 124/2010, 25/2012, 18/2013, 94/2014)

Law on Nature Protection (Zakon o zaštiti prirode), OG 80/2013

Law on Physical Planning and Construction (Zakon o prostornom uređenju i gradnji), OG 76/2007 (amended in 38/2009, 55/2011, 90/2011, 50/2012)

Law on Restitution/Compensation of Property Appropriated During Yugoslav Communist Rule (Zakon o naknadi za imovinu oduzetu za vrijeme jugoslavenske komunističke vladavine), OG 92/1996 (amended in 92/1999, 80/2002, 81/2002)

National Forest Policy and Strategy (Nacionalna šumarska politika i strategija), OG 120/2003

Ordinance on Habitat Types, Habitat Maps, Endangered and Rare Habitat Types and on Measures for Conservation of Habitat Types (Pravilnik o vrstama stanišnih tipova, karti staništa, ugroženim i rijetkim stanišnim tipovima te o mjerama za očuvanje stanišnih tipova), OG 7/2006 (amended in 119/2009)

Ordinance on Issuing, Renewal and Revoking of Licenses for Operations in Forestry, Hunting and Wood Processing Technology (Pravilnik o izdavanju, obnavljanju i oduzimanju licencije (odobrenja) za radove u šumarstvu, lovstvu i drvnoj industriji) (2007, amended in 2013) Komora inženjera šumarstva i drvne tehnologije [Online] Available from: <http://forum.hrsume.hr/komora/Pravilnik%20o%20licenciranju.pdf> [Accessed: 14 Nov 2014]

Rulebook on Method of Calculation, Forms and Deadlines for Green Taxes Payments (Pravilnikom o načinu obračuna, obrascima i rokovima uplate naknade za općekorisne funkcije šuma), OG 84/2010 (amended in 39/2012)

Statute of Advisory Service (Statut Savjetodavne službe) (2014) Ministry of Agriculture. [Online] Available from: www.savjetodavna.hr/adminmax/File/stranice/stranice_2014/Statut_Savjetodavne_sluzbe.pdf [Accessed: 14 Nov 2014]

8. Annexes

8.1. Tables with detailed description of 7 most important publications

ELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Halder, P., Paladinić, E., Stevanov, M., Orlović, S., Hokkanen, T.J., Pelkonen, P., (2014) Energy wood production from private forests – nonindustrial private forest owners' perceptions and attitudes in Croatia and Serbia. Renewable and Sustainable Energy Reviews. 35. pp. 515–526
English language summary/abstract	Private forests in Croatia and Serbia are highly fragmented in small plots with low productivity and owned by a large number of small-scale nonindustrial private forest owners (NIPFs). The study conducted surveys among 232 NIPFs in these two countries to find out their perceptions and attitudes related to energy wood production from their forests. The secondary objective of the study was to provide policy recommendations to the public authorities and professionals in these countries for improving the preconditions for energy wood mobilization from private forests. The study found that the NIPFs perceived underdeveloped market and low price for energy wood, absence of favourable policies, fragmented forests properties, older NIPFs' lack of interests in energy wood production, and difficulties in getting bank loan for energy wood related business activities as barriers against energy wood production from private forests. However, the NIPFs showed positive attitudes towards producing energy wood from their forests and they considered the possibilities of creating new jobs and commercial opportunities as strengths of energy wood production. The NIPFs' socio-demographic background had statistically significant relations with their perceptions and attitudes related to energy wood production. The dimensions of the NIPFs' perceptions and attitudes related to energy wood production showed two key dimensions – institutionalists and enthusiasts. The variables to explain the NIPFs' attitudes to energy wood production were different between the two countries and they indicated the differences in the country level circumstances for energy wood production. The results appeared to be relevant for understanding the issues that the NIPFs perceived as barriers against developing a viable energy wood market in their countries. When new forestry institutions and policies are emerging in these countries, the existing public and private forestry institutions need to play an important role for improving the preconditions for energy wood production from private forests.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input checked="" type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below)

Type of funding used (multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> National <input type="checkbox"/> Public Sub-National <input checked="" type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input type="checkbox"/> National <input checked="" type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Theoretical approach	Theory of planned behaviour (Ajzen, 1991)
Methodical approach	Survey questionnaire
Thematic focus	<p>ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.)</p> <input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input checked="" type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> new management approaches <input type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	Click here to enter text.
Weblink	http://www.sciencedirect.com/science/article/pii/S1364032114002652

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Carvalho Mendes, A.M.S., Štefanek, B., Feliciano, D., Mizaraite, D., Nonić, D., Kitchoukov, E., Nybakk, E., Duduman, G., Weiss, G., Nichiforel, L., Stoyanova, M., Mäkinen, P., Alves, R., Milijić, V., Sarvašová, Z. (2011) Institutional innovation in European private forestry: The emergence of forest owners' organizations. In: Weiss, G., Pettenella, D., Ollonqvist, P. and Slee, B. (Eds.) Innovation in Forestry: Territorial and Value Chain Relationships. p. 68-86. Chapter B. CABI Publishing.
English language summary/abstract	The emergence and development of organizations of private forest owners in situations where they were not previously collectively organized is a relevant institutional innovation in forestry. This chapter looks at the factors that may have contributed to this institutional change in the following countries: Austria, Bulgaria, Croatia, Finland, Lithuania, Norway, Portugal, Romania, Serbia and Slovakia. The conceptual framework used to present and discuss these country cases considers the following types of factors: (i) the structural changes in the social and economic environment of private forestry when forest owners' organizations emerged, and the needs for collective action of private forest owners triggered by those changes; (ii) the factors contributing to cope with the 'free riding' problems involved in collective action; (iii) the mechanisms leveraging the capacities of forest owners' associations beyond the initial domain where they emerged and contributing to give them the 'critical mass' needed for having substantial impact on forestry economic conditions; and (iv) the possible existence of 'path dependence' phenomena, where the conditions prevailing when forest owners' organizations emerged have a lasting influence throughout their lifetime. With different specifications according to the characteristics of each country, these four sets of factors appear to be useful as a common framework for organizing the explanation of how forest owners' associations emerged and developed in the countries considered here.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input checked="" type="checkbox"/> Other (please name below) <input type="text" value="COST Action"/>
Type of funding used(multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> National <input type="checkbox"/> Public Sub-National <input checked="" type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input type="checkbox"/> National <input checked="" type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe

Theoretical approach	Theories of institutional change, theory of collective action, critical mass theory, path dependency, economics, sociology, policy
Methodical approach	Case studies
Thematic focus	ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> new management approaches <input checked="" type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	
Weblink	

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Glück, P., Avdibegović, M., Čabaravdić, A., Nonić, D., Petrović, N., Posavec, S., Stojanovska, M. (2010) The preconditions for the formation of private forest owners' interest associations in the Western Balkan Region. Forest Policy and Economics. 12(4).p. 250-263.
English language summary/abstract	The private forest owners in Bosnia and Herzegovina, Croatia, Macedonia and Serbia are to a large extent not organised in interest organisations although their forests make up between 10% (Macedonia) and 52% (Serbia) of the total forest area. Private forest owners' interests are mainly in the hands of the public forest administration. This situation is not in accordance with democratic political systems. The paper investigates the preconditions for change by scrutinizing prevailing interest group theories by random surveys of private forest owners and in-depth interviews of forest policy decision-makers. As a result of the empirical research it has been found that, in spite of the large number of private forest owners, there are good chances for the formation of private forest owners' interest associations in all four countries, mainly because of the high critical mass of engaged private forest owners and the support of the majority of forest policy decision-makers.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input checked="" type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below)
Type of funding used(multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> National <input type="checkbox"/> Public Sub-National <input checked="" type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input type="checkbox"/> National <input checked="" type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Theoretical approach	Pluralism, theory of collective action (Olson, 1965), exchange theory (Salisbury, 1969); theory of critical mass (Marwell and Oliver, 1993)
Methodical approach	Questionnaire survey
Thematic focus	ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input checked="" type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> new management approaches <input type="checkbox"/> policy instruments addressing ownership
Weblink	http://www.sciencedirect.com/science/article/pii/S138993411000016X

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Avdibegović, M., Nonić, D., Posavec, S., Petrović, N., Marić, B., Milijić, V., Krajer, S., Ioras, F., Abrudan, I.V. (2010a) Policy options for private forest owners in Western Balkans: A qualitative study. Notule Botanicae Horti Agrobotanici Cluj-Napoca. 38(1).p. 257-261.
English language summary/abstract	Private forest owners start to play an important role in Western Balkans' forestry and they are essential to the successful implementation of environmental policies. Little is known about how forest policy can support private forest owners in these countries and therefore this study was conducted through a qualitative method, based on personal interviews with representatives of 54 stakeholders that include state forest authorities and administration, private forest owners associations, forest science and research and private sector in Bosnia Herzegovina, Croatia and Serbia. The results show significant homogeneity across the region towards creation of independent interest forest owners associations based on financial support. Regression analysis identified stakeholder attitudes as significant predictors of policy preferences and also identified owners of production forest as more supportive of such policies.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input checked="" type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below)
Type of funding used(multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> National <input type="checkbox"/> Public Sub-National <input checked="" type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input type="checkbox"/> National <input checked="" type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Theoretical approach	Forest policy, group theory (Bentley, 1949; Latham, 1952), the theory of collective action (Olson, 1965)
Methodical approach	Qualitative interviews
Thematic focus	<input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input checked="" type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> new management approaches <input checked="" type="checkbox"/> policy instruments addressing ownership
Weblink	http://www.notulaeobotanicae.ro/index.php/nbha/article/view/4691

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Avdibegović, M., Petrović, N., Nonić, D., Posavec, S., Marić, B., Vuletić, D. (2010b) Readiness of private forest owners in Croatia, Serbia and Bosnia-Herzegovina to cooperate in forest roads construction and maintenance. <i>Šumarski list.</i> 134 (1-2). p. 55-64
English language summary/abstract	<p>State of private forests and needs of private forest owners have not been in the focus of forest economics and policies research in the region of South-Eastern Europe so far. The past socio-political regime used to prioritize public property and management of private forest was therefore neglected for a long time resulting in degradation of forests. The present lack of forest roads is only one of the numerous consequences and sequentially has led to lower degree of fulfilment of different activities in private forests (silvicultural treatments, planning, and protection). Nowadays, different processes (transition, restitution, and privatisation) present in region support the development of rural areas where private forests are an important part of rural economy and overall management of natural resources. Findings of this research show that financially more demanding activities like forest roads construction and maintenance present a motive strong enough to establish interests groups like forest owners associations aiming to reach common goals. Research data was collected as a part of PRIFORT project, financed by the Ministry of Agriculture, Forestry, Environment and Water Management of Republic of Austria. The main interest of the project was research of the state of private forests and establishment of private forest associations in countries of the South-Eastern Europe. Theoretical framework was set between the Pluralistic theory and the Theory of Collective Action through which the group behaviour was analyzed. Afterwards, some findings have been confronted with the Exchange theory where better explanations for different behaviour group patterns were found. Homogeneity and heterogeneity of groups were also defined by the Critic Mass theory. The main hypothesis was "readiness for establishing interests groups is more pronounced in connection to activities which are financially more demanding as forest roads construction". Results for all three countries (Croatia, Serbia and B-H) show that private forest owners are interested in cooperation in construction and maintenance of forest roads. Generally, private forest owners are a part of elderly rural population with relatively small forest plots, mainly used for private needs (fuel wood) and with low income. Private forests are fragmented, with average plots smaller than 1 hectare. Most of the private forest owners expressed the need for having interest associations from which they would expect support in different aspects of forest management (Graph 2). The majority of forest owners expressed interest in cooperation on construction and maintenance of forest roads (Graph 1). Results and conclusions presented in this paper provide useful information for decision makers in government bodies responsible for rural development with special consideration given to possibilities of private forest sector development.</p>
Language of the study/publication	Croatian with English summary
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input checked="" type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below) <input type="text"/>

Type of funding used (multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input type="checkbox"/> National <input type="checkbox"/> Public Sub-National <input checked="" type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input type="checkbox"/> National <input checked="" type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Theoretical approach	Forest policy, pluralistic theory, theory of collective action, exchange theory, critic mass theory
Methodical approach	Survey questionnaire
Thematic focus	<p>ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.)</p> <input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input checked="" type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> new management approaches <input type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	
Weblink	http://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=74656

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Lovrić, M., Martinić, I., Landekić, M., Šporčić, M. (2009) Private forest management in Europe. Nova Mehanizacija Šumarstva. 30(1). p. 27-35.
English language summary/abstract	Excluding the former SSSR, most of the forests in Europe are private. However, up to now there have been no comprehensive data bases about them. Models of private forest management vary significantly, depending on the relative share of private forests, their ownership structure, development progress of the sector and its share in the GDP. This paper provides an overview of private forests in Croatia, South-Eastern Europe and in the entire Europe, as well as a depiction of trends in their management, with the analysis of the influence of those trends on the management of private forests in Croatia. Relevant studies predict a growth of demand for timber above the level of annual allowable cut in Europe. Considering the fact that in most European countries private forests are managed with a lower intensity than state owned forests, it is expected that the difference between the projected timber demand and supply will probably be compensated by bringing the annual allowable cut in private forests close to the level of their increment, by intensifying silvicultural operations and by applying economies of scale in logging activities. In order to do so, private forest owners should join into associations that act at the level of operational forest management.
Language of the study/publication	Croatian with English summary
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below) <input type="text"/>
Type of funding used(multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input checked="" type="checkbox"/> National <input type="checkbox"/> Public Sub-National <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input type="checkbox"/> National <input checked="" type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Theoretical approach	Forest policy
Methodical approach	Literature review

Thematic focus	ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> new management approaches <input checked="" type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	
Weblink	http://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=81635

SELECTED REPORTS/PUBLICATIONS	
Full reference of study/publication	Paladinić, E., Vuletić, D., Posavec, S., (2008) Review of the state of private forest ownership in the Republic of Croatia. Radovi Šumarskog institute. Jastrebarsko. 43(1).p. 45-58
English language summary/abstract	<p>Private forests and private forest ownership has to be reconsidered under the light of changed relationships and the ongoing process of restitution. State of private forestry in Croatia as one of the transition countries, is characterized by small property size, huge number of owners and modest level of organisation. At the same time this sector is characterized by numerous changes and noticeable development. The newly established Extension service for private forest owners under the Ministry of Regional Development, Forestry and Water Management brought private forestry into the focus, providing information, education, help and fresh ideas to the private forest owners.</p> <p>Results of their activities can be seen through highly increased number of private forest owners' associations and their slightly changed attitudes towards their forest property. In the future, the importance of this service can only grow because of its linking position in many processes connected to the accession to the European Union or in using the pre-accession funds. This paper also presents the main characteristics of private forest owners, their respective forest properties, state of their organisation and relating legislative.</p>
Language of the study/publication	In Croatian with English summary
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> University <input checked="" type="checkbox"/> Public Research Institute <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Other (please name below) <input type="text"/>
Type of funding used(multiple answers allowed)	<input type="checkbox"/> Private Industry <input type="checkbox"/> Private other <input checked="" type="checkbox"/> National <input type="checkbox"/> Public Sub-National <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public other
Regional scope	<input type="checkbox"/> Sub-national <input checked="" type="checkbox"/> National <input type="checkbox"/> Cross-national Europe <input type="checkbox"/> International beyond Europe
Theoretical approach	forest management, policy and legislation
Methodical approach	literature review

Thematic focus	ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> new management approaches <input checked="" type="checkbox"/> policy instruments addressing ownership
Main results should be given here if not yet included in the summary.	
Weblink	http://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=44134

8.2. Forest ownership structure – detailed tables

8.2.1. National data set

Table 1A: Forest area according to ownership (Source: National Forest Inventory, 2010)

Category	Definition	Area (ha); share in total area (%)
<i>Public ownership</i>	Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.	1 987 799 ha; 77.02%
<i>Private ownership</i>	Forest 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.	593 027 ha; 22.98%

8.2.2. National data in FRA reporting

Table 2A: Forest ownership according to FRA criterions (Source: UNFAO 2010 – FRA Country report, Croatia, p. 14)

National classes (forest according to FRA criterions)	Area (ha)		
	1986	1996	2006
<i>State ownership</i>	1420280	1359176	1416135
<i>Private ownership</i>	454030	434470	528699
<i>TOTAL</i>	1874310	1793646	1944834



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