

SCOPING STUDY

for Commercial and Sustainable Private
Forest Management in the Canton Sarajevo

Sarajevo, 2017.



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Abbreviations:

BiH	Bosnia and Herzegovina
CEPF	Confederation of European Forest Owners
CIS	Commonwealth of Independent States
CoC	Chain of Custody
CS	Canton Sarajevo
DB	District of Brčko
EU	European Union
FAO	Food and Agriculture Organization
FBIH	Federation of BiH
FOA	Forest Owners' Associations
FOOs	Forest owners' organizations
FSC	Forest Stewardship Council
HCVFs	High Conservation-Value Forests
IPA	Instrument for Pre-accession Assistance
IPARD	Instrument for Pre-Accession Assistance in Rural Development.
NFI	National Forest Inventory
NGO	Non-government organisation
FMAWMF	Federal Ministry of Agriculture, Water Management and Forestry
PC	Public Company
PFO	Private Forest Owner
PFOA	Private Forest Owners Association
PES	Payments for ecosystem services
PFO	Private forest owners
RD	Rural Development
RS	Republika Srpska
SAA	Stabilization and Association Agreement
SFM	Sustainable Forest Management
SIDA	Swedish International Development Cooperation
USAID	United States Agency for International Development

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1. Introduction

Bosnia and Herzegovina (hereinafter BiH) is a country in South-Eastern Europe with the total area of 51,197 km² and an estimated population of almost 4 million inhabitants. In 1990, BiH held its first democratic multiparty elections and in early 1992 the country proclaimed its independence from the former Yugoslavia when political conflicts escalated into war. During the war between 1992 and 1995, more than half of the pre-war population of the country was displaced from their homes. In terms of administrative and political regulation, the country consists of the following three units: the Federation of Bosnia and Herzegovina (FBiH)¹ – the focus of this Study, the Republika Srpska (RS), and the District of Brčko (Figure 1). Twenty years after the war, the country is still characterized by numerous problems that jeopardize further political and economic development.



Figure 1: Map of the BiH

BiH is a potential candidate country for EU accession. In June 2008, the EU and BiH signed the Stabilization and Association Agreement (SAA). An Interim Agreement on Trade and Trade-related issues entered into force on 1 July 2008 and the Council adopted a new European partnership with BiH on 18 February 2008. BiH has benefited from EU autonomous trade measures since 2000. BiH and the European Commission signed the Financing Agreement for the Instrument for Pre-accession Assistance (IPA) 2007 National Programme on 31 July 2008, which was a major milestone on BiH's

¹ The Federation of Bosnia and Herzegovina is decentralized. It consists of 10 Cantons (each with its own government) and 79 municipalities. The Government of the Federation of Bosnia and Herzegovina shares and delegates some of its competencies with the Cantonal administrations. Both the Government and the Cantons have the right to determine policy and to adopt laws that pertain to any of their competencies. Where competencies are further delegated to the municipalities (the lowest administrative level), their activities are financed and supervised by the Cantons.

road to Europe. As a pre-candidate country, BiH cannot yet take full advantage of IPA support. So far, there are no specific projects toward the Instrument for Pre-accession Assistance for Rural Development (IPARD), due to pending country's progress in ensuring key sector priorities in place, namely a country wide sector strategy and IPARD set up.

BiH is the country with the highest forest share, the highest forest type diversity in the Western Balkans and one of the richest forest type diversities in Europe. The estimated number of plant species, subspecies, and varieties is 3,572 with 500 of them endemic. Covering more than half (63%) of the country, forest resources are important both to the national economy and to local livelihoods. But these resources, especially for smallholders, are not fully tapped. Forests have a critical role to play in a number of ecosystem services, benefits, and resources to society: maintenance of biodiversity, regulation of water and soil regimes, mitigation of climate change effects and providing substantial additional income for rural communities. Together with the wood-processing industry and agriculture, forestry plays a key role in the development and well-being of most rural areas. Forests also provide several ecosystem services, benefits, and resources to society. The forestry sector has had an irreplaceable role in post-war reconstruction, rehabilitation, and the economic stability of the country.

According to the official data from the document *Information on forest management in the Federation of BiH* (2014), forests and forest lands cover an area of 1,523,700 ha (58% of the territory of the FBiH). The state owned area amounts to 1,466,700 ha (81.8%) and privately owned amounts to 277,000 ha (18.2%). Although full-scale data of the second state forest inventory (carried out between 2006 and 2009) is not available yet, some preliminary results point to a tremendous increase in forest area in some regions of FBiH i.e. forests cover over 60% of the territory of the FBiH; however, these tendencies do not have much to do with forestry management activities but with socio-economic circumstances and the natural processes of forest succession due to neglect and abandonment of rural areas. Since the data from the Second State Forest Inventory is not officially published, data from *Information on forest management in the FBiH* (which implies data from forest management plans) is still used.

Forest resources in FBiH show typical structures for countries in South-East Europe for which a huge amount of coppice forests are typical. Coppice forests amount to 355,400 ha in total and high forest amount to 673,300 ha in total. The ratios of high forests and coppice forests are diametrically opposed when comparing public and private ownership. Public forests are mostly mature forests of higher profitability (72 % of high forests are state forests) and they are under systematic forest management. On the contrary, smallholder forest owners have insufficient means to take similar actions and develop their coppice forests into forest properties with high biodiversity, and environmental and economic viability. Private forests are predominantly used for domestic fuel wood collection and only 20% of all smallholder forest owners are selling either fuel wood or saw logs on the market.

According to the official data (Federal Ministry of Agriculture, Water Management and Forestry, 2016), state forests in FBiH have the following structure: high forest 86.4 % and coppice forests 13.6%. The total wood stock of all state-owned forests of FBiH amounts to 161,294,352 m³ (38:62 in favor of deciduous). The average stock of all forests together amounts to 192.4 m³/ha (243.3: 85.2 m³/ha in favour of high forests). As a consequence of the war, roughly 125,190 ha of all categories of forests are contaminated by mines, which heavily affects effectiveness of forest management, including fire and disease control. Average growing stock of all forest in FBiH amounts to 4,418,953 m³ - 5.27 m³/ha (high forest: 6.26 m³/ha and coppice 75.7 m³/ha) while the average annual volume increment is 5.08 m³/ha (high forest: 6.26 m³/ha and coppice 3.23 m³/h). Based on the proportion of the total annual volume increment and annual allowable cut as well as the fact that total cuttings in 2016 were 3,068,322 m³ (44%:56% in favour of deciduous), it can be concluded that total growing

stock of state forests in FBiH is permanently increasing. However, 87.2 % of available cut is realized in high forests. Almost 44 % of the state forests and forest land in FBiH is under the FSC certification system, and Pre-evaluation for certification is done for an additional 17 % of the territory. By acquiring certificates, evidence of responsible forest management and successful implementation of legal regulations in forestry management processes is gained.

Compared to the relatively intensive management of public forests, private forests have been neglected by both, forest policy decision makers and forest owners. Private forests in BiH are a valuable source of various goods and services that could be effectively managed by their owners with help of state forest extension and administration. One of the main problems related to smallholder forest owners is that they are not represented in policy planning and implementation of executive plans. Further, smallholder forest owners in BiH are not organized in local interest associations, and without organizing they cannot reach economies of scale for their forest products from their small allotments. So far, no certified private forests exist in BiH and regarding certification, forest owners lack capacity and knowledge. There is an evident dissatisfaction among smallholder forest owners regarding the representation of their interests. A large portion of smallholder forest owners are not fully familiar with legislation and their responsibilities for managing their forests, as well as their rights and opportunities for putting this resource into function of livelihood security. Forest owners in BiH have no resources or preconditions to adopt innovative management approaches due to the fact that laws at all administrative levels and institutional arrangements do not recognize this category of forest ownership as equally important as public forests.

The lack of organization among the approximately 250,000 smallholder forest owners² in FBiH is a challenge for implementation of private forest management plans (where these plans are adopted, but for most municipalities they are not),³ practicing sustainable forest management, coherent wood mobilization, and proper representation of forest owners in the political process. Thus, smallholder forest owners have little structure to follow as well as no place for accessing knowledge, networks, information, and tools for resource sharing to effectively manage their forestland.

This scoping study aims to provide knowledge about the smallholder forest potential in FBiH, in particular Canton Sarajevo (CS), and to promote different options in terms of better management and greater benefits for forest owners, especially about the importance and benefit of being organized to reach economies of scale from their small allotments. This knowledge will be distributed to forest owners, relevant stakeholders and partner organizations and will serve for future civil society strengthening through local forest owner association building.

Implementing and presenting the scoping study will provide effective communication and advocacy material towards engaging forestry owners and local forestry authorities in commercial and sustainable private forest management.

2. Methodology

2.1 Scope of the Study

The pilot project intervention took place in the larger government unit, the FBiH of where approximately 80% of the forestland is government owned forests and 20% is under smallholder

² FAO (2015). Analysis of the forestry sector in Bosnia and Herzegovina.

³ Forest management of the private forests is based on adoption of forest management plans for all private owned forests within one municipality (prepared by municipality) and executive plans for silviculture activities (prepared by Cantonal Forest Administration). Forest Management Plans are not developed for four cantons (out of 10): Una-Sana, Herzegovina-Neretva, West Herzegovina and Canton 10. Due to the existence of the Law on Forests, preparation of Forest Management Plans for private forests is responsibility of the competent cantonal ministries (Cantonal Forestry Administration).

ownership. This scoping study, with a case study approach, is focused on Canton Sarajevo (one of the 10 cantons in FBiH) where out of the total area of forests and forest land, 85% are state owned (e.g. owned by CA) while 15% are privately owned. This represents similar ownership forest-estate relations model as the rest of the FBiH i.e. 82:18 in favour of government owned forests.

The aim of this study was to undertake a detailed analysis of:

- existing forest policy, legislation and organization of the forestry sector in FBiH at all levels of government (FBiH, cantons, municipalities),
- the smallholder forestry sector in BiH to identify interests of smallholder forest owners as well as wood-processing industry,
- the economic potential of smallholder forestry in BiH to identify necessary actions to reach the potential;

all in order to provide recommendations for improving the position of the private forest owners (PFOs) through changes in the legislative-political framework, while respecting the inter-sectoral approach in a specific socio-economic and political environment, as well as taking into account processes of the international forestry policy and EU regulations.

In several places in the study, a comparative review of the situation in Denmark was given to understand both the realities (BiH and Denmark) and to enable making recommendations in accordance with good practices from Denmark.

2.2 Overview of the approach and methods

2.2.1 Literature review

Data sources on forest resources are comprised of two central elements:

- statistical information based on the data from public forest enterprises and statistical agencies.
- National Forest Inventory (NFI) - not available to date (only some preliminary data).

Regarding forest statistics, information on forest resources has been mainly based on taxation of forest stands under public forest enterprises responsibility as a means for management planning. This data does not provide a comprehensive overview on forest resources such as forest area and growing stock.

For the need of this scoping study, numerous data sources and reports have been used and analysed.

Table 1: Available literature and data sources on forestry in BiH

Institution	Source	Period	Available at:
Ministry of Physical Planning, Construction and Environmental Protection of CS	Cantonal Plan for Environmental Protection	2016	n/a
Agency for Statistics of BiH	Reports on production, sales and stocks of forest assortments in BiH (quarterly and yearly published)	*no report for 2006 2004–2016	http://goo.gl/vcAsjn http://goo.gl/FX06I2
Institute for Statistics of FBiH	Monthly statistical review – Chapter on Agriculture, hunting and forestry	2008–2016	http://goo.gl/DUXzBo
	Statistical Yearbooks (Chapter on	2014–2016	http://goo.gl/wZFuHg

Institution	Source	Period	Available at:
	Agriculture, hunting and forestry)		http://fzs.ba/index.php/publikacije/godisnji-bilteni/sumarstvo/
	Monthly release– Production and sale of forestry assortments in FBiH	2016	http://goo.gl/BEB786
Ministry for Agriculture, Water Management and Forestry of F BiH	Annual information on forest management in the FBiH	2006–2011	http://goo.gl/jK4Zf8
FAO	Global forest resources assessment country report BiH	2010	http://goo.gl/HFFVdq
FAO	The Forest Sector in BiH Preparation of IPARD Forest and Fisheries Sector Reviews in BiH	2015	http://www.fao.org/3/a-au015e.pdf
EFI	PFOs in the Western Balkans Ready for the Formation of Interest Associations	2011	http://www.holzwirtschaft.com/sites/default/files/userfiles/1file/efi_rr_25_2011.pdf

2.2.2 Consultations at entity, cantonal and local levels

2.2.2.1 Consultations with decision makers, private forest sector experts and existing Private Forest Owner Associations (PFOAs)

The project team organised several meetings with the Cantonal administration for forestry, as well as meetings with representatives of the PFOA “Naša šuma” Banja Luka and NGO “Association of PFOs and Nature Lovers” Binježevo. The PFOA “Naša šuma” Banja Luka mainly operates in Republika Srpska (RS) and the NGO “Association of PFOs and Nature Lovers” Binježevo represents an interest group with app. 40 members. The project team organised consultation meetings with representatives from the Faculty of Forestry of the University of Sarajevo, especially from aspect of PRIFORT Project⁴, as well as with the consulting firm PC “Bosanskohercegovačke šume”⁵.

2.2.2.2 Survey

According to the population size (17,000 PFOs in CS), and taking into account a confidence level of 95% and confidence interval of 5, a statistically significant sample size amounts to 376 PFOs.

The survey was questionnaire based (Questionnaire is given as Annex 1 of this study). The questionnaire was distributed to the local communities’ (Bosnian: *mjesna zajednica*) representatives in person and placed as advertisement on public boards in local communities. An online (electronic) version of the questionnaire was put on the web⁶. Face-to-face interviews were organized with PFOs that could be reached.

The realized sample was 339, with a respondent rate of 90%.

⁴ The two-year research project (from May 2007 until April 2009) was supported by the Austrian Ministry of Agriculture and Forestry, Environment and Water Management in concurrence with the European Forest Institute (EFI) and the Finnish FOPER I Project.

⁵ Developer of Forest Management Plans for CS. More information available at: <http://www.bhsume.com.ba/index.html>

⁶ Weblink:

https://docs.google.com/forms/d/e/1FAIpQLSdKVDXOzi575ExQGie5y0vr_RCXbRyY0LFRTk0c9mrfASOwqw/viewform?c=0&w=1&includes_info_params=true

2.2.2.3 Focus groups discussions

The focus group discussion method was used to obtain detailed information about personal and group feelings, perceptions and opinions, and to provide a broader range of information and get a deeper understanding of the problems.

Through organising focus groups, the project reached over 130 PFOs in 16 local communities that are located in the municipalities Centar, Ilijaš, Hadžići, Trnovo, Vogošća. The included local communities are:

1. Blagovac
2. Dejčići
3. Dragoradi
4. Gajevi
5. Gora
6. Kamenica
7. Kobilja Glava
8. Ljubina
9. Lokve
10. Misoča
11. Mrakovo
12. Pionirska dolina- Nahorevo
13. Šabići
14. Srednje
15. Svrake
16. Vogošća II.

It is important to note, from all organised focus groups and field visits, all local communities of Municipality of Ilijaš were very quick and open to respond to all proposed activities of the project.



Figure 2: Focus group in the Local Community Mrakovo, Municipality of Ilijaš

Contact database of PFOs has been established by fea with participants of the focus groups.⁷ The number of contacts in the contact database of PFOs is over 90, but most of the PFOs provided phone numbers without e-mail addresses, because they do not use the internet.

⁷ Web link:

https://docs.google.com/spreadsheets/d/14X6NpxfXmmZVwViGuMOPljFbhJB-e6s_ymg6uIM2Z44/edit?ts=596f6485#gid=1965684282:

2.2.2.4 Workshops

In the framework of the project, two workshops were organized in Sarajevo. The first workshop was organized on October 31st, 2017 with representatives from the forest administration, public institutions and municipalities. The second workshop was organized on November 2nd, 2017 and it was targeting PFOs and the forest administration.

The conclusions from the first workshop were, as follows:

- Major problem is forest properties usurpation.
- The owners are obliged to prove the ownership of the specific property (data from land books); It is necessary to pay attention to: Law on land books and Rulebook on rendition;
- Data in the cadastre and land books do not match in some municipalities; the first phase of data harmonization is in implementation to date; The court is obligated to solve issues of harmonization of data, not the municipality; All processes are still in accordance to the Law from 1986, since the new law has not been adopted for 12 years; The most frequent nonconformities regarding data in cadastre and land books are in urban areas of Sarajevo (Municipality Centar, Municipality Stari Grad and Municipality Novo Sarajevo are municipalities that obey legal procedures and their data in cadastre and land books are harmonized).
- Federal administration for geodetic and property affairs: the problem appears when the old land survey is still being used, although there is a new land survey. Property boundaries are determined based on the new land survey; It is necessary to create new digital orto-photo maps; Geoportal (katastar.ba) is available to all land owners and stakeholders.
- Procedures to change the culture (land cover) in the cadastre is quite complex. An application should be submitted to the municipality, after that a Commission should be established (foresters, agronomist). The price of the procedure costs around 50,00 BAM (app. 25 Euros). There are not many similar requests and municipalities have no interest to initiate these procedures.
- BH šume: Forests are not managed by the state, entities are in charge for forest management (centralized in RS, decentralized in FBiH). There is no coordinated forest management at the federal and cantonal level, data are not harmonized; BH šume are at disposal regarding data and field.
- The forest management plan is not being fully implemented for private forests; Key problem with the forest management - a lack of human resources (2,000 ha is covered by one forester).
- Private forests are public good; there should be partnership relations between the state (Government) and private forest owners; Private forest owners' association could be a better manager, because it would be established at the state level. In this way, it's possible to plan, manage and protect forests better; Private forest owners should be convinced that their forest products will have a better position on the market, if they become members of an association.
- People in BiH do not recognize forests as a chance because they have to pay taxes for something they don't use efficiently.
- Scoping Study should include a part dedicated to forest owners' education about the significance of forest owners' association.
- Sarajevo šume: there is high demand for all forest products in CS.
- Private forests are characterized by weak quality; In private forests, coppice forests are dominant. A success of forest products from private forests is questionable without high investment and conversion of coppice forests to a high forests; Coppice forests - all coppice forest should be treated as a raw material for biomass production and supply of biomass should be created.

Conclusions of the Second workshop were, as follows:

- Participants identified the following problems that occur during management of their own forests:
 - Degradation of forest roads, forest land and alteration of surface water drainage due to movement of heavy machinery of the PC "Sarajevo-šume"; PC "Sarajevo-šume" carried out unauthorized cutting of forests in the water protection zone of the local water source for the Local Community Kamenica and did not respond to private forest owners' appealed complaints against the caused land degradation.
 - Generally poor condition of access roads, the roads are overgrown with vegetation or the stability of the terrain is impaired in private forests.
 - Poor forest management and inability of management causes the occurrence of forest diseases (drying of trees, pests).
 - Inability to manage its own forests because some areas are situated within the boundaries of Protected Landscape (PL) "Bijambare", the impossibility of heavy mechanization transport to the specific land plot due to the prohibition on the movement of heavy machinery within the PL "Bijambare".
 - Inability to manage their own private forests since some have mines from the war or are considered as mine suspected areas. The demining of the terrain is not carried out to the extent that it would be necessary (plateau Žuči, Vogošća).
 - A complicated inheritance procedure, including inheritance of forests and forest land. The aforementioned causes several owners to appear on the same land plot, which increases the administrative costs if the parcel is transferred to the ownership of only one person.
 - The private ownership of some participants in the workshop was occupied by the former state after the airplane recording of the terrain that occurred during 1986.
 - The current state of agricultural or forest land is not in accordance with the land use defined in the Cadastre data.
- Local community Kamenica is agricultural area therefore they have mechanization (tractors) and motor chains; They pull out the trees out of the forest by themselves and they do not need the assistance in these activities; The problem that is highlighted is the lack of cutting machines that were available in almost every local community before the last war; They point out that they need access to cutting machines and that we should support the private sector to obtain permits for these activities (one cutting machine per 3-4 local communities). Without cutting machines and processing they need to sell the raw material - round wood and that does not pay off; Cutting price per cubic meter is approx. 30 BAM -15 Euros (Heavy cutting band saw brenta) up to 40 BAM- 20 Euros (circular); Forester provides information where they can sell their wood and at what price, e.g. round wood of spruce, fir, pine is app. 130 KM / m3 with their transport (or often 90 BAM which is a very low price).
- There is no problem with bureaucracy / administration except that the transport permit is valid for only one day; The problem is also with the type of use of land in the cadastre (for example, if it was pasture (still pasture in cadastre) and you have a forest in reality today, you can do a clear cut but then you cannot get transport permit).
- It is necessary to work on the ban of the export of firewood because already there are shortages in the local market (they must come to the city to buy firewood). They are witnesses that more than 1,000,000 cubic meters are exported to Germany and Austria.
- They use non-wood forest products to a smaller extent, but generally the population uses NTFPs mainly for their own needs.
- Participants believe that the new Law on Forests will not be adopted because it's not properly prepared. Management of the forests is given in the jurisdiction of the FBiH.
- Participants' properties are in the area of state properties (surrounded by the state forests).
- Certification is very important and desirable, both for state forests and private forests.

- Two examples of plantations establishment in the pre-war period: experimental plantation of white pine (4ha) in Tarčin and plantations of raspberry and blackberry at one property (agroforestry); One of the participants planted Paulownia in the area of fir, beech and spruce but the expected growth and development didn't happen; Example of Douglasia tree in Banja Luka (company Incel); this tree type has a problem with the sale.
- If it's really necessary, a conversion into another forest type should be performed.
- PFOs think that a lot of things are unprepared to start the exploiting private forest; As main problem they see stealing of wood by persons that are selling stolen wood on black market; they sell this wood in rural areas in small quantities (in average from 0,5 m3 to 5 m3); Illegal logging (stealing) of the I and II categories of forests; destroyed forest areas during warfare (logging of other forests, as well as a large number of shrapnel in logs due to the proximity of the first lines).
- Problem of mechanization (tractors, chainsaws and other equipment) in general (in non agricultural areas).
- Lack of interest of young people for forests and activities linked to forests (their children and the children of their friends) and generally for life in rural areas. This leads to lack of workforce to exploit forest.
- The people who attended the working group nevertheless believe that, despite these problems, there is potential for the development of the association of private forest owners for the purpose of their clustering and getting more important role in the market.

The participants discussed possible solutions to the problems of managing their own forests:

- To sell the parcels located within the PL "Bijambare" to Cantonal Public Institution "Protected Areas of the Sarajevo Canton" in accordance with the Law on Nature Protection of the FBiH (Official Gazette of FBiH, No. 66/13) and the provision of first purchase.
- To urge the competent institution BHMAG to carry out demining of the remaining areas,
- The future association of private forest owners should provide expert advice on better forest management.
- The future association of private forest owners should provide the necessary legal consultation when appealing to problems in the area or during the process of realization of ownership.
- Private forest should be certificated together with state forests, considering the fact that the procedure is financed by the fund (fees) for beneficial functions of forests; Additional suggestion: let the state to manage all forests and pay fees to the owners.
- Participants believe that plantations are more suitable for flat areas.
- Forests in BiH have a huge natural potential and amazing regeneration capacity, so there is no high need for plantations establishment.

3. Characteristics of Private Forests in BiH and Europe

3.1 Characteristics of Private Forests and Forests Ownership in BiH

3.1.1 State of Private Forests in BiH

Unlike reports for state owned areas, there are no available data or reports on private forests in BiH. There is no report for forests and forestry at the Cantonal level for Sarajevo, there are no established monitoring processes of forests, especially not for the private owned forest areas. All statistical data are available at the federal level only.

The state of private forests is evaluated during the process of developing the Private Forest Management Plans, which is regulated at the municipality level.

According to Gluck et al. (2011) private forests in BiH dominantly cover lowland areas, where the forest coverage is the lowest, while state forests include the areas with high forest cover. When compared, ratios of high forests and coppice forests are diametrically opposed. 72% percent of high forests is owned by the state and 62% percent of total coppice forests is owned by PFOs (FAO, 2015). As public forests include mostly high forest areas, these forests are more profitable and under systematic forest management. This also means that the state has the opportunity to manage better forest sites. On the other side, PFOs use forest sites to sustain their livelihood, using forests as a primary source for firewood and small construction wood. Considering the constitutional arrangement of the country, the ownership of public forests is divided between two entities (FBiH and RS). Cantons (in FBiH) and municipalities (in both entities) do not have the ownership rights over public forests (FAO, 2015).

Private forests are mainly owned by individuals and in very rare cases by some institutions (e.g. religious institutions). During the socialist period, private forest ownership was ignored by national forest policy makers who did not pay attention on private forests. Compared to the relatively intensive management of state forests, private forests have been quite neglected by both, forest policy decision makers and PFOs today as well. As a result, few forest policy instruments exist in BiH to guide owners and decision makers on private forest management. Private owners are almost not represented in national forest policy, due to the lack of independent interest associations. Private owners' interests are mainly in the hands of public forest administration. Most private owners hold forest properties smaller than 1 ha. In addition, these properties are often fragmented into 2 to 7 plots on average. Mixed and coppice forests dominate and volume and annual increment per hectare are modest compared to state forests. The private forests are mainly used for domestic fuel wood and saw log consumption; tourism, nature conservation, and hunting are of minor importance.

The official number of PFOs in BiH is not known (but estimated to be around 500,000). Fuel wood for domestic purposes is the predominant type of using private forests in BiH and only 20 percent of PFOs are market-oriented by selling either fuel wood or saw logs (Glück et al. 2011). There are some indications that private forests areas have been increasing within the last 20 years. This is mainly due to general tendencies of spontaneous natural afforestation of abandoned agricultural land in rural areas.

Private forests in BiH represent a valuable source of various goods and services that could be effectively managed by their owners with the support of state forest administration. The main issue related to PFOs is the fact that they are not included in policy planning and implementation of executive plans. Laws at all administrative levels and institutional arrangements do not recognize this category of forest ownership as equally important as public forests, which is why PFOs in BiH, as individuals, have no potential to adopt innovative management practices.

As a way of increasing their role in implementation of forest management plans, it is suggested that PFOs organize themselves into PFOAs. Despite the fact that PFOs in BiH are characterized as inert and unorganized, there are some examples of PFOAs in the country (PFOAs "Naša šuma" Banja Luka, "Šume Krajine" Banja Luka and "Tisa" Bihać).

3.1.2 History of Forest Ownership in BiH

Land tenure and property rights are crucial social institutions that define opportunities and constraints related to sustainable forest management (SFM). The ownership pattern in BiH draws heavily from the political and historical changes that the country has gone through. In order to understand the current forest land structure in BiH, it is important to know the basic social and political context of forest land tenure changes in the past.

In medieval Bosnia, forest land tenure and related issues were similar to those in other European countries of that period. The royal dynasty was the sole owner of the whole territory of the Bosnian kingdom. Several Bosnian noble families were awarded with the land for their loyalty. In order to keep social peace, the nobles conceded some usage rights (without transferring ownership rights) to their serfs (vassals); e.g. for fuel wood, collecting fruits, pasture etc. During the Ottoman Empire a completely new forest ownership pattern was established. The legal base for forest land tenure was Islamic canonical law based on the teachings of the Koran and the traditions of the Prophet (the Shariat). Forests were considered as a public good and could not become subject to private ownership.⁸

Some forests, called “Baltalici”, were designated for the satisfaction of the local population’s needs – the complex type of usage rights which in other European countries over time evolved to what we know nowadays as community forests. In addition, some remote forests, called “Džiboli-mubah”, also existed and all were allowed to use these “free forests” without any charge, either for their own needs or for commercial purposes.⁹

Considering the fact that business and trade were not quite developed in that period, the commercial demand for forest products did not exist. So, there was no real need for the development of private forests as a specific type of ownership. This forest land structure was kept for centuries. In the first half of the 19th century, wood became an important raw material and gained increasing market value and Bosnian feudalists started usurping forest areas and selling their traditional usage rights to foreign forest exploitation companies, mainly from Croatia, Austria and Hungary. For the very first time, in 1858 private forest land was recognized as a legal form of forest ownership by the so called “Ramadan’s Law on land tenure” if new forests were planted and cultivated by the owners themselves. The so called “Ševal’s Law on forest” (1869) proclaimed all free forests (“Džiboli-mubah”) as state property. By the same law all other types of forest ownership (“Baltalici”, endowment forests - “Vakufi” and private forests) were temporarily put at the disposal of the state until their ownership status had been reconsidered¹⁰. Immediately after the annexation of BiH by the Austro-Hungarian monarchy (1878), the first landscape cadastre was conducted (1880–1885) and forest ownership issues were regulated in accordance with “Ševal’s Law on forest” from 1869. “Baltalici” remained property of the state although some restricted users’ rights of the local population were recognized (so-called “Meremat” right of local rural population). In this context, communal forests as a special type of forest ownership were abolished. For the purpose of achieving Austro-Hungarian political aims, some forest areas were given to private owners, mainly to powerful local feudalists. Consequently, at the end of the 19th century private forests in BiH amounted to about 550,000 ha (Forestry encyclopaedia 1980). The Forest Law of the Yugoslavian monarchy from 1929 significantly affected private forest estates. According to this law the state intervenes in forest estates that are greater than 300 ha.¹¹ At this time the average size of private forest properties was already much less than 300 ha as a result of permanent dividing and inheritance. The absence of state intervention resulted in exaggerated cutting of private forests and the consequences of this, such as unsatisfactory stock volume, are still present. Agrarian reform in the former Yugoslavia in 1945 limited the ownership of private forests to 8-30 ha, depending on terrain. Although it is generally considered that the agrarian reform had a very strong impact on private land ownership in the former Yugoslavia, the land nationalization process influenced mainly private agricultural properties (plough-field, pastures, hay-field etc.) while the greater part of private forest estates, due to constant inheritance, was already below the prescribed maximum of 8–30 ha. Since the 1990s, processes such as privatization, denationalization and restitution, have qualified the issue of private

⁸ Begović, B. (1960). Strani kapital u šumskoj privredi Bosne i Hercegovine za vrijeme Otomanske vladavine. Radovi Šumarskog fakulteta i Instituta za šumarstvo i drvenu industriju. Sarajevo

⁹ Čomić, R. (1999). Organizacija proizvodnje i menadžment u šumarstvu. Šumarski fakultet. Banja Luka

¹⁰ Forestry encyclopaedia 1980. Volume 1, Jugoslovenski leksikografski zavod, Zagreb

¹¹ Sabadi, R. (1994). Kratka povijest šumoposjedničkih odnosa i šumarske politike u Hrvatskoj. Hrvatske šume. Zagreb

land ownership at the top of public policy debates. Although ownership restitution is not yet completed in BiH, the comparison of forest inventory results conducted by the Austro-Hungarian monarchy (1880–1885) with the current area of private forests in BiH, indicates that the share of private forests will probably not significantly increase as a result of the restitution process.¹²

Bearing in mind that PFOs in BiH are not organized in interest associations, their properties are extremely small-scale and fragmented into a few parcels, the existing forest policies are developed with little or no consideration of inputs from PFOs. The results of the GOVOR project, implemented in BiH, related to the legal framework to support and protect land tenure, ownership, and use rights (FAMFG component 2) show that 90% of interviewed forestry professionals found component 2 of forest governance important or very important while almost 70% of them evaluated the level of implementation as low or even non-implemented. These answers largely relate to the current situation in private forests, which are dispersed among thousands of non-organised owners. Individual properties are fragmented and the number of owners is increasing as a result of continuous division owing to inheritance processes.¹³

3.2 State of Private Forests in Europe

More than half of Europe's forests, not including Russia and other CIS countries, are privately owned. Although 58% of forests in Central and Western Europe are privately owned, the percentage of privately owned forests at the whole European Continent is quite low (10%). All forests in Russia, Ukraine and Belarus are owned by the state. Outside the Russian Federation, ownership is distributed equally between private and public, with considerable variation between countries. The proportion of private forests and numbers of private forest holdings have increased over the last 20 years, mainly because of privatization and restitution processes in a number of countries.¹⁴

In northern Europe, the forest sector is mostly privately-owned, well organized, and focused on wood production, with a strong commitment to achieving environmental objectives. In most of northern Europe, the boreal forest is at the centre of the landscape. There is an intensive use of the resource and a sophisticated and well-resourced institutional structure. Among countries that have more than 60% of privately owned forests are: Sweden, Austria, Norway, Slovenia, France, United Kingdom and Ireland. In terms of numbers of PFOs as well as distributions of size classes, small scale land holdings prevail in European forests. 61% of all private forest holdings have an area of less than 1 hectare and 86% of all holdings belong to the size classes of up to 5 hectares. 13% of the private forest holdings are in the size classes from 6 to 50 hectares and around 1% of the owners have forest units over 50 hectares.¹⁵

There are many different categories of forest owners in Europe, wherein the most numerous one is the category of private owners. Private owners are further divided on two categories: (1) rural owners that mostly live near their forest, work in the agricultural sector and manage their forest by themselves; (2) urban owners that live far from the forest and mostly are not interested in managing their forest. A second category of private ownership is the wood processing industry and the third one is the ownership of private companies, organizations and Churches. The largest PFOs' association in Europe is the Confederation of European Forest Owners (CEPF). CEPF gathers representatives of national forest owners' associations and currently counts 23 member countries which represent the

¹² FAO (2015). The forest sector in Bosnia and Herzegovina. Preparation of IPARD Forest and Fisheries Sector Reviews in Bosnia and Herzegovina. FAO Regional Office for Europe and Central Asia

¹³ Gluck, P., Avdibegović, M., Čabaravdić, A., Nonić, D., Petrović, N., Posavec, S., Stojanovska, M. (2011): Private Forest Owners in the Western Balkans - Ready for the Formation of Interest Associations. European Forest Institute Research Report 25. Finland

¹⁴ FOREST EUROPE, UNECE and FAO (2011). State of Europe's Forests 2011. Status and Trends in Sustainable Forest Management in Europe.

¹⁵ Ibid.

interests of 16 million PFOs. The main tasks of CEPF are representing their members' interests and education of members.¹⁶

Private owners play a key role in sustaining forest ecosystems, enhancing rural development and supplying resources to markets. Nevertheless, a significant lack of knowledge remains on private forest ownership in Europe.

The size of the public and the private forest areas in Europe without the Russian Federation are both about 100 million ha, while there are about 800 million ha of public forest in the Russian Federation. Although significant forest areas in Europe have been privatized, the total public forest area remains of the same order as 20 years ago, compensated by a general expansion of forests in many countries. At the same time, the private forest area has increased by more than 15%. For most countries, the number of forest holdings in public ownership has been relatively constant or decreasing, while the total number of private forest holdings increased substantially between 1990 and 2000 and somewhat slower later on. The main driving force behind the changes in ownership structure is the efforts towards privatization and restitution of forest land in countries formerly under centrally planned economies.

Forest management and forest ownership is currently undergoing a variety of changes and here are some of the most important ones¹⁷:

- Changes in the forest ownership structure - in many European countries an increase in private forest area is happening. There is an evident increase in the number of PFOs in Western Europe, due to increase in the number of urban PFOs. This process is especially active in Finland. In Poland, people living in urban areas are buying agricultural land with the aim to convert it in forest area. Similar processes are happening in Ireland, where the policy of conversion of pastures and agricultural land is established.
- Changes in forest ownership - these changes are related to processes of restitution and privatization, mostly in countries of Central and Eastern Europe (Bulgaria, Czech Republic, Germany, Hungary, Latvia, Lithuania, Romania, Slovakia, Slovenia and Serbia).
- Decreasing of forest area size (fragmentation) and increasing number of forest owners - these changes are the consequence of the forest area inheritance process and afforestation process of agricultural land. At the same time, it represents one of the main reasons of lower forest management efficiency and one of the greatest challenges of forest policy. Forest area fragmentation is quite common in Bulgaria, Cyprus, Finland, France, Hungary, Iceland, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

3.2.1 Good practice examples of successfully organized forest owners

Since the early 1990s, eastern European countries have experienced institutional changes following the breakdown of communism. These changes are also reflected in the field of forestry, which means that reorganization of forestry administration and management was included, as well as the restitution and privatization of parts of state-owned forests. As a result of landownership restitution in eastern European countries, the new private forests are mostly highly fragmented holdings, and the new forest owners don't have the knowledge and experience required for forest management. Forest owners' organizations (FOOs) represent an instrument for supporting the sustainable management of private forests and an appropriate option for overcoming new challenges.¹⁸

¹⁶ Lovrić, M., Martinić, I., Landekić, M., Šporčić, M.(2009). Upravljanje privatnim šumama u Evropi. Nova mehanizacija šumarstva br. 30. Zagreb.

¹⁷ Ibid.

¹⁸ https://www.researchgate.net/publication/264542236_SUCCESS_CASES_AND_GOOD_PRACTICES_IN_FOREST_OWNERS'_ORGANIZATION_S_IN_EASTERN_EUROPEAN_COUNTRIES

The establishment of an interest group for collective action could be quite challenging, but the final result represents a public good that benefits to all owners.¹⁹ One way of improving participation in interest groups/associations is through coercion by the state, such as the obligatory membership in chambers of agriculture in Austria; another is for the association to offer exclusive incentives to active members, such as information services. An FAO study²⁰ emphasizes that some other factors may also influence the participation or non-participation in interest groups, such as the level of resentment against collectivism in former socialist countries. In the same study, analysis of success factors and good practices in forest owners' organizations in Eastern European countries was performed. Some of the conclusions will be mentioned in the following paragraphs.

After the restitution process, all the countries recognized the need to create FOOs, considering the large share of fragmented properties and unknowledgeable new PFOs. Both policy-makers and PFOs recognized FOOs as a significant way to represent landowners' interests in the policy-making process and to improve forest management practices. Forest owners' organizations in EE countries were established after the institutional changes that followed communism, particularly the restitution process. The main goal was to overcome challenges that emerged as result of institutional change, but also to improve the management of the newly established private forest properties. It takes considerable time for FOOs to become influential, visible and powerful in the forest policy arena, and for forest owners to accept FOOs as service organizations. Activities such as developing capacities, knowledge, experience, networks and trust are time-consuming activities and an ongoing process.²¹

Success factors of forest owners' organizations include the following:

- **Organizational strength and inclusiveness**: strong bottom-up initiatives; clearly identified member base; interest from PFOs; charismatic leaders (human capacity); reliability and leadership of organizers (key members); involvement of trained and professional experts; external/technical support; transparent financial management; strengthening of the member base.
- **Institutional development**: participation in forest policy-making; clear and stable policy goals and principles over time; establishment of regional organizations.
- **Participation in policy and advocacy**: coordination and cooperation with other FOOs, NGOs, government and public administration; participation in political processes/effective lobbying/strong alliances; good communications (internal/external); awareness raising of forest owners regarding cooperation.
- **Forest owners' economic development**: accession to EU – support from EU funds; free advice and consulting services for PFOs; broad range of forest-related services; - flexible service provision; organization of training/educational courses/events; marketing activities; business cooperation; establishment of joint timber trade.

Textbox 1: Successful establishment of forest owners' organization in Denmark²²

Success Case: Denmark

With technical assistance of the Danish Forest Association (DFA) and financial support from the Ministry of Agriculture, the first Danish Forest Owners Association (DFOA) was established in 1904. It was based on 163 members holding app. 1.300 hectares of private forest.

¹⁹ Olson, M. (1971). The logic of collective action. Public goods and the Theory of Groups, Harvard Economic Studies 124.

²⁰ FAO (2015). The forest sector in Bosnia and Herzegovina. Preparation of IPARD Forest and Fisheries Sector Reviews in Bosnia and Herzegovina. FAO Regional Office for Europe and Central Asia

²¹ https://www.researchgate.net/publication/264542236_SUCCESS_CASES_AND_GOOD_PRACTICES_IN_FOREST_OWNERS'_ORGANIZATION_S_IN_EASTERN_EUROPEAN_COUNTRIES

²² DFE, 2018

During the following 50 years, the number of associations increases, and totals 16 in 1965 representing 5.300 members holding app. 35.000 hectares of private forest.

All associations were and still are operating economically and legally independent. From the very beginning each association was and still is governed by a board of directors democratically elected by its members at the annual general assembly.

In 1982 a common secretariat was established. The secretariat doesn't hold any formal authority towards the individual associations, but is instead responsible for assisting the different board of directors, developing human resource policies, marketing etc.

Over time the DFOAs have enjoyed different type of public subsidies. Initially, the Ministry of Agriculture financially supported the head forester in each association with an amount equalling app. 75% of the salary of a state forester. Later, this was changed to cover 5-10% of the annual salary of all approved foresters employed by DFOA. The remaining expenditures for the operation of the DFOAs was covered by contracting services, sales of forest produce, consultancy etc. In 2009 all subsidies for extension service was ceased, and from then on DFOA has operated solely on a commercial basis.

In order to comply with EU competition regulations, the DFOAs formed in 2010 a holding company structure governed by a supreme board.

Since 1993, DFOA has experienced an ongoing process of organizational mergers. Thus, today the number of associations is reduced to 5. The membership base constitutes app. 5.000 and the forest cover is app. 80.000 hectares. This equals app. 22% of all private forest / forest owners making DFOA the leading private forest consultancy.

DFOA in numbers:

-**Number of members:** app 5.000

-**Number of hectares:** app 80.000

-**Annual turnover:** app. 70 million EUR

-**Number of staff:** app 100

-**Annual sales of wood:** app 600.000 m³

-**Annual sales of Christmas trees:** app 1 million

-**Annual sales of greenery for decoration:** app 3.000 tons

-**Annual sales of seedling:** app 3 million.

Textbox 2: Successful establishment of forest owners' organization in Latvia/Estonia²³

Success Case: Latvia/Estonia

After the fall of the Iron Curtain, and as the Baltic States gained independence, a restitution process of land ownership followed. It quickly became clear, that after almost 50 years of nationalization of private properties, the knowledge of private forest management had almost disappeared. Forest properties were handed back to individuals / families with little if any ties to and knowledge about how to manage their land.

In order for the restitution process to become successful, it was considered necessary to organize and educate the private forest owners. Based on that assumption, DFOA was invited to Lithuania. With financial support from Danish Environmental Assistance to Eastern Europe (DANCEE), and in close collaboration with resource strong and dedicated individuals as well as the State Forest, DFOA facilitated the foundation of the Forest Owners' Association of Lithuania (FOAL) in 1993.

Prior to the formation of FOAL, DFOA facilitated the provision of intensive institutional capacity building. Ranging from education of coming board members to training of forest owners and forest consultants, developing by-laws and conducting the first General Assembly. A thorough process that evidently created lasting ownership amongst its stakeholders.

²³ DFOA and <https://forest.lt/>

Thus, FOAL has become an organization that represents the interests of family forest owners at the national and international levels, which after more than 20 years of activity has grown into a social organization, uniting over 6500 members. FOAL is actively engaged in the private forest policymaking process with The Parliament, The Government, The Ministry of Environment, which is responsible for implementation of forest policy in Lithuania, as well as the Ministry of Agriculture and National Paying Agency, which administers European Union support for rural development.

Textbox 3: Successful establishment of forest owners' organization in Romania²⁴

Success Case: Romania

In Romania, the state and the private sector have almost equal shares in forest ownership, at 52 and 48 percent respectively. The forest restitution process in Romania started in 1991. The first wave of forest restitution was not successful (social justice problems and non-existence of legal framework for illegal cutting prevention are the main reasons), which is why the PFOs had to be united and coordinated. In 2006, the Romanian Government and the World Bank initiated a pilot project with the main aim of establishing and supporting FOAs. Among the new associations that were created was FOA Marsani, established in 2007. In 2010, FOA Marsani created the largest private forest district on the Romanian plains.

Although FOA Marsani is successful, its evolution has not been easy. Initially, forest owners expressed resistance to register as they were afraid of paying more taxes and more legal obligations. The crucial incentive was people's growing concern about sand storms and production losses caused by land erosion. Another important incentive was good cooperation with the local administration, which provided the FOA with logistics assistance: the mayor's office sent its employees door-to-door to distribute application forms for joining the FOA and has hosted the FOA office since the beginning.

The direct support provided by FOA Marsani's professional foresters has been very helpful and demonstrates how a well-organized community can take advantage of financial aid provided by the Land Reclamation Fund. Another beneficial outcome is the private forest district itself, through which the administration fee paid by each forest owner has been reduced. By creating its own forest district, the FOA weakened the monopolistic position of the National Forest Administration in the plain region, which represents a real success in promoting competitiveness in Romanian forestry. The visibility of private forestry has also been improved by this success story, which demonstrates that the economic advantages of joining together can include lower costs as well as the higher revenues that are generated in most other cases, where the growing stocks and allowable cuts are considerably larger.

4. Context and Background

4.1 Legislative framework

Article III of the Constitution of BiH contains a list of competencies at BiH level. Forestry is not listed under the aforementioned Article, and it falls under the competences of two Entities (FBiH and RS) and Brcko District. Part III of the Constitution of FBiH (Division of responsibilities between the Federation and the cantons) regulates that the FBiH shall have exclusive responsibility for economic policy and land use policy at FBiH level, but both the FBiH and Cantons shall have responsibilities for environmental policy and use of natural resources. As appropriate, these responsibilities may be exercised jointly or separately, or by the Cantons as coordinated by the Federation Government. In FBiH the ownership of the public forest resource is under FBiH's competences, which transfers management rights to the Cantons.

²⁴https://www.researchgate.net/publication/264542236_SUCCESS_CASES_AND_GOOD_PRACTICES_IN_FOREST_OWNERS_ORGANIZATIONS_IN_EASTERN_EUROPEAN_COUNTRIES

At FBiH level there is no adopted Law on Forests. The forestry sector is regulated by the Law on Forests²⁵. FBiH Law on Forests was applied until 27th November 2009, when it was challenged by the verdict of the Constitutional Court of FBiH²⁶ because the Municipality's right to local self-government was violated by the provisions contained in the Law. At the end of 2009, FBiH Government adopted the Decree on Forests²⁷ which was applied until March 2011. This Decree was also challenged by a verdict of the Constitutional Court of FBiH²⁸.

The Federal Ministry of Agriculture, Water Management and Forestry (FMAWMF) developed the pre-draft of a new law on Forests and submitted it to FBiH Government for consideration in November 2011. After the submission of the pre-draft FBiH, the FMAWMF urged the FBiH Government to take the law into consideration on several occasions throughout 2012 – 2015. In September 2015, the FBiH government issued the conclusion²⁹ based on which a working group was formed in order to support FMAWMF in the development of the new draft of the law. After the development of a new pre-draft and after holding public consultations, FMAWMF submitted the new pre-draft to the FBiH government which adopted it on 27th May 2016 and submitted it as Draft Law to the parliamentary for adoption.

Upon the adoption of the Draft Law by the FBiH parliament, and public hearings held in each FBiH Canton in July 2017, the FBiH government agreed on the Proposal of the Law on Forests. This proposal still needs to be adopted by the FBiH parliament in order to be published in the Official Gazette of the FBiH as a Law.

In the meantime, nine Cantons have developed and adopted their own Laws on Forests.³⁰ By adopting these Cantonal legal regulations, FBiH competences prescribed by the FBiH Constitution are reduced, especially in issues related to forest management, ownership, as well as the allocation of financial resources for the use, protection and improvement of forests.

4.1.1 Provisions regulating private forest management and other issues in Canton Sarajevo

Canton Sarajevo also developed and adopted its Law on Forests³¹ and by-laws. This Law regulates planning in forestry, forests and forest land with a special management regime, forest protection and their functions, forest management, forest inventory and economic functions of forests and use of forests for other purposes.

Private forest management

According to the CS Law on Forests, the management of forests and forest lands implies administrative tasks of the Ministry of Economy of Sarajevo Canton and Cantonal Administration for Forestry, which consist of: creation of a unique forestry policy, long-term (strategic) and mid-term planning, expert control of the use of forests and forest lands in order to preserve and improve sustainability of forest management.

Private forests are in the Law identified as all forests and forest land for which a natural or legal person is registered in the land registry as owner. Private forests are managed by their owners. The

²⁵ O.G. of FBiH, No. 20/02, 29/03 and 37/04

²⁶ O.G. of FBiH, No. 36/09

²⁷ O.G. of FBiH, No.83/09, 26/10, 38/10 and 60/11

²⁸ O.G. of FBiH, No. 34/11

²⁹ FBiH Government Conclusion No. 682/2015

³⁰ Currently the Draft Law on FBiH level is under parliamentary procedure, this means that it has not been adopted yet and does not apply. After its adoption, it is necessary to harmonize all Cantonal Laws on Forest with the new Law on FBiH level. In addition, during the analysis of the new Draft Law at FBiH level, we noticed that a lot of provisions are similar to the ones contained in Cantonal Laws.

³¹ O.G. of CS, No. 5/13

owner is obligated to supervise its forest, and to transfer, with the contract, the performance of professional activities to the Forestry Administration or an authorized company for conducting professional activities in private forests. In addition the Law defines forest users. According to the Law forest users are Public Utility Company- PUC "Sarajevo-šume" Ltd. Sarajevo, Cantonal Public Institution for Protected Natural Areas, and legal and natural persons registered as forest owners.

The role of PFOs during the development of forestry planning documents

As prescribed by the Law, private forests are managed according to provisions of the Forest Management Plan (which has to be harmonised with Cantonal Forest Development Plan), the Annual Management Plan and the Project Execution Document. Table 2 contains a brief description of the forestry planning documents at CS level and the role of PFOs during the development of the aforementioned documents.

Table 2: *Description of the forestry planning documents at CS level and the role of PFOs during their development*

Cantonal Forest Development Plan
The Cantonal Forest Development Plan is developed every ten years for all forests and forest land, regardless of ownership with the aim of ensuring the sustainability of forest management in the CS area. The Ministry of Economy of Sarajevo Canton is responsible for the preparation, development and implementation of this Plan, and during its preparation, it is required to ask all interested parties to submit their proposals and opinions. <u>This means that PFOs also have the right to submit their proposals and opinions, and in this way contribute to the development of the Cantonal Forest Development Plan.</u>
Forest Management Plan
The Forest Management Plan is a long term planning document which contains data on all state and private forests and which prescribes all activities which will be performed in forests for the next 10 years, including cutting, afforestation, construction of roads and buildings, protection of forests, among others. The Forest Management Plan has to be harmonised with the guidelines contained in the Cantonal Forest Development Plan. Provisions contained in the Forest Management Plan are mandatory. A unique Forest Management Plan has to be developed for all private forests in the area of one municipality. The methodology for the development of the Forest Management Plan is described in more details in the Regulation on Elements for the Development, Procedure for Adoption and Audit of Forest Management Plans ³² . According to the aforementioned Regulation, the Forest Management Plan can be developed by the legal entity that is registered for this type of activity. This Plan is adopted by the Ministry of Economy of Sarajevo Canton upon receipt of the opinion of the Municipality Assembly (for each individual FMP). <u>According to this development procedure, PFOs are not involved during the development of the Forest Management Plan.</u>
Annual Management Plan
In case it is not possible to develop a new Forest Management Plan, it is possible to manage state and private forests for a maximum period of one year according to provisions contained in the Annual Management Plan. Provisions contained in this Plan are also mandatory. The methodology for the adoption of the Annual Management Plan is almost the same as for Forest Management Plans, <u>without any provision regulating the participation of PFOs during the development of this Plan.</u>
Annual Plans for the Implementation of the Forest Management Plan
The Forest Management Plan is implemented according to the Annual Plans. Project Execution Documents are integrated in the Annual Plans for the Implementation of the Forest Management Plan. The Annual Plan has to be submitted by the user at the latest by 30 th November of the current year for the next year. The approval of the Annual Plan, is given by the Cantonal Administration for Forestry, with the previously obtained opinion of the relevant Municipality, within 30 days from the date of receipt of the Plan. The forest user has to submit the Annual Plans for the Implementation of Forest Management Plan to the Forest Inspector's Office Forest Inspection and to the Municipality within 15 days after its approval. <u>During the development of the Annual</u>

³² O.G. of SC, No. 19/14

Plan, the role played by the PFOs is minor and there are no provisions related to their direct involvement. The only activities performed by the PFOs are submission of Annual Plans to the Cantonal Administration for Forestry for approval and to the Inspection Authorities at the end of the procedure.

Project Execution Document

The Project Execution Document is prepared for cadastral parcel / plots for private forests in accordance with the Annual Plans for the Implementation of Forest Management Plan. Provisions contained in the Project Execution Document are mandatory. The Project Execution Document can be developed only by persons with a bachelor's degree in forestry / master's degree with at least two years of working experience in this field. Forest users or the PFOs can choose who will develop the Project Execution Document. The Project Execution Document is implemented by the forest user for state forests (PUC "Sarajevo-šume" Ltd. Sarajevo), and for private forests by the Cantonal Administration for Forestry or a legal person or entity authorized to perform this type of activities in private forests. The forest user decides who will be the implementer of the Project Execution Document. In case of private forests, Project Execution Document for forestry works and for cutting are mandatory if the annual harvest is greater than 100 m³ per owner. The Project Execution Document has a lasting character and must be kept in the archives of forest users, Cantonal Administration for Forestry or the legal entity performing professional activities in private forests. Also in this case, the role of PFOs is minor without any concrete participation in the development of the content of the Project Execution Document.

Forest protection

Forest protection is a set of measures and activities that are required to be undertaken by owners and users who manage the forests in order to protect forests from fire, other natural disasters, harmful organisms, diseases and harmful anthropogenic impacts.

Identification and marking of trees for cutting

The identification and marking of trees for cutting and the volume of forestry activities in private forests is done on the basis of the Ministry of Economy of Sarajevo Canton's decision (but in line with prescribed available annual cut in FMP) through the Cantonal Administration for Forestry. Tree identification and cutting can be approved only for owners who obtain and submit evidence of the right of ownership.

Biological reproduction of forests

PFOs are obliged to carry out tasks of biological reproduction of forest to a minimum extent, which is foreseen by the Forest Management Plan.

Sanitary cutting

In order to avoid insect spreading, plant diseases or harmful organisms, PFOs are obliged to implement or provide for the implementation of sanitary cutting. The Cantonal Administration for Forestry is obliged to provide sanitary cutting in private forests in case the owners cannot carry out the sanitary cutting themselves. Forest users and owners of private forests are obliged to carry out measures for forest protection listed in Article 20 Law on Forests of Sarajevo Canton, like installation and maintenance of pheromone traps, rehabilitation of forest areas after natural disasters, stumps peeling and treating, establishment and maintenance of the forest order.

Exploitation of wood and non-wood forest products

Wood, parts of trees and branches cut in the forest should not be moved from the hive until they are marked with a painted hammer. Marking, counting, measuring, recording and issuing of a proper approval for wood from private forests is carried out by the Cantonal Administration for Forestry or a

company authorised for conducting professional activities in private forests. Non-wood products are not allowed to be placed on the market³³ without the consent of PFOs.

Protection of forests and forest lands from damage

The Law forbids fire lighting, however the Cantonal Administration for Forestry and PFOs can determine areas of a private forests where it is possible to light a fire, and these areas have to be respected. PFOs are obliged to regularly inform the cantonal and municipal authority in charge of civil protection tasks on all fires in forests and forest lands. The use of chemicals in forests and forest land is also forbidden, except for certified chemicals, provided that they do not endanger the biological balance. Such chemicals are those that can be used in forest/plant nurseries. Certain certified chemicals can be used in protection from wildlife and weeds, to reduce the excessive insect population whose number cannot be reduced in any other way, and for the destruction of forest fires.

Waste and pollutants disposal in forests and forest lands is also forbidden and forest owners are obliged to remove the waste disposed on the territory of their forests. PFOs have the right to compensation for costs incurred from each individual or legal person who disposed waste, rubbish or pollutants in the private forest.

The Law on Forests of Sarajevo Canton also forbids pasturing in forests. However, PFOs may allow pasturing on areas determined by the Forest Management Plan, according to the agreed fee, and provided that livestock is controlled by the cattle keeper and that it does not endanger the biodiversity in the forest.

Forest renewal after disasters

In case of damage to the forests caused by any biotic or non-biotic influences, including forest fires, if the owner of the private forest can prove that he is not able to finance the costs of forest renewal according to the Plan for renewal of damaged and destroyed forests developed by the Cantonal Administration for Forestry, he can apply to the Ministry of Economy of Sarajevo Canton or Municipality for financial resources.

Use of non-wood forest products

The Law allows the cultivation and use of non-timber forest products by forest users and owners, which have the right to authorize other legal entities and natural persons to use this type of products to the extent and in places determined by the Forest Management Plan.

Forest users and owners of private forests can use/cultivate for their needs, for the needs of citizens and other legal entities, forest products like humus, clay, peat, sand, gravel and stone from the soil surface. They can also remove bark from trees and do tree drilling, remove branches and other remnants of wood from the cuttings, as well as other organic substances necessary for improving soil fertility but in line with FMP (in theory). The exploitation of the aforementioned non-wood forest products is forbidden for other purposes and if it endangers the biodiversity of forest ecosystems.

The Law regulates also the presence of wildlife species which must ensure the biological equilibrium and cannot endanger other species of the ecosystems. The user of the hunting ground is obliged to

³³ According to Article 24 of the Law on Forests of SC putting on the market means transport by road, purchase, sale, gift, storage as well as receiving wood in the processing capacities in which wood processing is carried out.

compensate the damage caused by wild species to the user and owner of the private forest in accordance with the provisions of the Law on Hunting of FBiH³⁴.

Protection of endangered species

Article 36 of the Law on Forests of Sarajevo Canton contains the list of endangered species and it is forbidden to cut, eradicate or damage these species, except in cases when breeding and when sanitary cuttings are required.

Movement of motor vehicles in private forests and on forest roads is also forbidden except in cases listed in Article 38 of the aforementioned Law. PFOs may allow the movement of vehicles on forest roads upon agreement with the possibility to ask for a fee. Any damages on forest roads committed by other users must be compensated to the forest owner.

According to the Law all persons have the right to move through the forest. Forest owners are not obliged to take special precautionary measures for the forest visitors and shall not be held liable for any damages or injuries suffered by such persons. Article 39 contains a list of activities that cannot be performed in private forests without the permission by the forest owner.

Forests with special management regimes

In order to ensure their protection or special regime of management, certain forests can be declared as protective forests or forests with a special purpose, which will be managed according to a special regime in line with the forest type and purpose. This management regime is regulated by the Law which regulates the proclamation of protective forests and forests with special purposes. Forest owners are entitled to compensation for limited use or increased management costs. The remuneration shall be borne by the legal entity who submitted the request for the proclamation of protective forests or forests with a special purpose, and the amount of compensation reached through an agreement, and if the agreement is not reached, the compensation is determined by the competent court.

Brief conclusion

Based on this analysis of provisions regulating issues related to PFOs, it can be concluded that the Law on Forests of Sarajevo Canton prescribes many obligations related to the implementation of activities and measures for adequate forest management, but few rights are attributed to PFOs, especially during the development of planning documents.

4.1.2 Differences between provisions of Law on Forests from 2002 and new Draft Law on Forests

Table 3 below shows the differences between provisions related to PFOs contained in the Law on Forests from 2002 (Old Law) and the new Draft Law on Forests from 2006 (new Draft Law).

Table 3: *Differences between provisions related to PFOs contained in the Law on Forests from 2002 (Old Law) and the new Draft Law on Forests from 2006 (new Draft Law)*

Issue	Provisions of the Old Law	Provisions of the New Draft Law	Main differences
Private Forest Management	The Cantonal Ministry, through the Cantonal Administration for Forestry,	The PFO transfers, with the contract and by fee, the performance of professional	According to the new Draft Law, the PFO decides who will perform the professional

³⁴ O. G. of FBiH, 4/06, 8/10 and 81/14

Issue	Provisions of the Old Law	Provisions of the New Draft Law	Main differences
	performs professional activities related to the management of private forests, and can transfer some activities to the Cantonal Forestry Economy Company (PC "Sarajevo šume")	forestry activities to the Cantonal Ministry or to an authorized company for conducting professional forestry activities.	forestry activities. In addition, there is no possibility for Cantonal Forestry Economy Companies to perform this type of activities in private forests.
	Forest owners participate in financing of the development of Forest Management Plans for private forests proportionally to the surface, together with the allocated funds from Cantonal Ministries.	Development and monitoring of Forest Management Plans for private forests is financed from allocated funds in the Cantonal budget.	According to the new Draft Law, private forests owners do have to finance the development of Forest Management Plans.
Pasturing	The Law forbids pasturing in forests. The Cantonal Ministry can, according to the agreed fee, allow pasturing to PFOs on areas that are defined by the Forest Management Plan.	New Draft Law also forbids pasturing in forests. However, PFOs may allow pasturing on areas determined by the Forest Management Plan, according to the agreed fee, and provided that livestock is controlled by the cattle keeper and that it does not endanger the biodiversity in the forest.	The two Laws treat this issue under different aspects. The old law treats PFOs as owners of cattle and according to the old law PFO pays a fee for pasturing, while no fee is mentioned for other people who bring the cattle to pasture on private forests and no fee is foreseen for them.. The new Law regulates the right for PFOs to receive fees from pasturing activities on their forest land.
Use of non-wood forest products	PFOs can, by paying a fee, use non-wood forest products for their needs, for the needs of citizens and other legal entities, in line with the Forest Management Plan.	Forest users and PFOs can use non-wood forest products for their own needs and in line with the Forest Management Plan.	The new Draft Law does not mention any fee for the use of non-wood forest products.
Project Execution Documents	In case of private forests, projects for forestry works and for cutting are mandatory if the annual harvest is greater than 200 m ³ per cadastral municipality.	In case of private forests, projects for forestry works and for cutting are mandatory if the annual harvest is greater than 100 m ³ per cadastral plot.	Difference in calculation of annual harvest quantities for mandatory development of projects for forestry works and cutting.
Biological reproduction of forests	PFOs are obliged to allocate financial resources for simple and extended biological reproduction of forest. Before placing the wood on the market, PFOs are obliged to pay to the Canton the amount of 15% of the	PFOs are obliged to carry out tasks of biological reproduction of forest to a minimum extent, which is foreseen by the Forest Management Plan.	Provisions related to the payment of financial sources are not contained in the new Law, but only obligations related to activities related to biological reproduction of forests.

Issue	Provisions of the Old Law	Provisions of the New Draft Law	Main differences
	amount of approved wood for cutting at the market prices of wood.		
Organisation of technical professional courses	The Cantonal Administration for Forestry will organize professional courses, in cooperation with the Federal Forest Administration and forestry educational institutions, for employees who did not have forestry training as well as for PFOs. These courses will be financed with allocated funds of the cantonal and FBiH budget.	Organisation of technical professional courses will be financed with allocated funds of the cantonal budget.	According to the new Draft Law there are no specifications if the private forestry owners can attend the technical professional courses.
Sanitary cutting	The Cantonal Administration for Forestry is obliged to carry out measures for forest protection in private forests (installation and maintenance of pheromone traps, rehabilitation of forest areas after natural disasters, stumps peeling and treating, establishment and maintenance of the forest order).	Forest users and PFOs are obliged to carry out measures for forest protection.	In this case the responsibility for carrying out measures for forest protection is transferred from the Cantonal Administration for Forestry to PFOs.
Forest renewal after disasters	In case of damage to the forests caused by any biotic or non-biotic influences, including forest fires, the Cantonal Administration for Forestry in cooperation with the Federal Forest Administration develops the Plan for renewal of damaged and destroyed forests and forest lands.	In case of damage to the forests caused by any biotic or non-biotic influences, including forest fires, forest users in cooperation with Cantonal Ministry develop the Plan for renewal of damaged and destroyed forests and forest lands.	In this case, the development of the Plan for renewal of damaged and destroyed forests and forest lands is transferred to the PFOs. There are no big differences because the development of this type of plan can be performed by Cantonal Administration for Forestry or by the legal entity authorized for this type of activity.

Brief conclusion

Main differences between the two versions of the law are related to some fees and payments that PFOs were obliged to pay. For example, according to the Old Law, PFOs participated in financing of the development of Forest Management Plans, while according to the new Draft Law, this obligation is abolished. PFOs were obliged to allocate financial resources for simple and extended biological reproduction of forest. They also were obliged to pay a fee to the Canton for selling wood placing it on the market. The new Law does not contain anymore these provisions.

In addition, some activities are transferred from Forest Administration to PFOs, like implementation of measures for forest protection and development of Plans for renewal of damaged and destroyed forests and forest lands. In this case, it is more a transfer of responsibilities because PFOs have no professional experience to implement these activities. PFSOs have to transfer the performance of professional forestry activities to the Cantonal Ministry or to an authorized company. PFSOs do this by signing a contract and paying a fee.

Taking into consideration the analysis of the Law on Forests in Sarajevo Canton, it can be stated that the Law on the Sarajevo Canton level and the new Draft Law on FBiH level have similar provisions related to PFOs. However, these two Laws do not regulate the possibility of establishing the association of PFOs in order to represent their interests.

4.2 Strategic framework

There are no strategic documents adopted in the forestry sector at BiH, FBiH or CS level. Although some strategic documents propose clear goals related to the forestry sector, there are no objectives related to PFOs and to private forests. The issues related to the forestry sector are only occasionally subject for public political agendas.

A Forestry Program has been developed in FBiH, which constitutes the basic document defining participative, comprehensive, inter-sectoral and permanent processes of planning, implementing, monitoring and evaluating forestry policy with the aim of achieving sustainable forest management of all forest property modules, together with an action plan for its implementation. The Forestry Program of FBiH is still in a draft version and is the only strategic document that strongly encourages the formation of interest associations of forest owners in FBiH.

In addition to the Forestry Program, a draft version of a Wood Industry Development Strategy for the period 2016 - 2025 was prepared and is the only strategic document that promotes the cooperation between industrial wood processing sector and forestry sector, without any details related to private forest and PFOs.

Cantonal level strategic documents, like **the** Development Strategy of Sarajevo Canton until 2020, contain measures related to improvement of state forestry management without mentioning private forests.

Table 4 shows different strategic documents, some of them still in draft version, which are connected to the forestry sector and objectives related to PFOs contained in aforementioned strategic documents. As noted, only a few of them contain objectives and measures related to private forests and PFOs.

Table 4: Review of strategic documents in the forestry sector or connected to the forestry sector and objectives related to PFOs contained in strategic documents

Strategic document	Description and main objectives of the strategic document	Objectives and measures related to PFOs
BiH level		
Action Programme to Combat Land Degradation and Mitigate the Effects of Drought in BiH	Strategic and operative objectives identified in this Action Programme are in compliance with the basic commitments and objectives of UNCCD, more specifically the objectives of the UNCCD Strategy. The general objective of this Action Programme is to combat land degradation and mitigate the effects of drought by implementation of	<u>There are no specific measures related to PFOs.</u> Only one activity related to the forest management under Strategic Objective 3. Improvement and Implementation of Melioration Measures, Remediation and Sustainable Land Management in BiH is foreseen by this document and

Strategic document	Description and main objectives of the strategic document	Objectives and measures related to PFOs
	preventive measures in the high risk areas, and recover degraded land by applying melioration and protection measures. This document treats the problem of inadequate forest management in relation to land degradation. It contains measures that will prevent further forest land erosion and forest protection, that are strictly connected to PFOs rights and duties, but does not mention PFOs as stakeholders, but only public forest management companies.	public forest management companies are responsible for its implementation together with Entity Ministries in charge of agriculture and forestry.
Strategy and Action Plan for Protection of Biological Diversity (NBSAP) BiH 2015-2020	The NBSAP BiH (2015-2020) represents the basic document for nature protection in BiH, which provides a detailed overview of biological diversity status by 2014 and is the basis for the assessment of the situation in the coming period. The national targets of biological diversity conservation in the NBSAP BiH (2015-2020) were set based on the priorities and specificities of BiH and were to the fullest extent compliant, with the Strategic Plan 2011-2020, taking into account the overall economic, social and cultural development of the country. The document also proposes indicators for each of the national targets, an Action Plan with measures to be implemented over the next five years, as well as implementation plans that serve as a tool for successful and facilitated implementation of the NBSAP BiH (2015-2020).	The document contains objectives related to the preservation of ecosystems in forests, and improvement of forest management by introducing FSC. There are <u>no objectives</u> related to PFOs.
FBiH level		
Forestry Program of FBiH (Draft)	The Draft version of the Program was adopted by FBiH Government in July 2017 and submitted to FBiH Parliament for adoption. Main objective of the Program is to ensure the protection and sustainable management of forest resources and the development of forestry as an economic branch.	Strategic objective 1.1.9 Creation and maintenance of political-legislative and administrative framework, as well as institutional assumptions for ensuring continued development and improvement of management of forests and forest lands, both public and private forests According to this strategic objective <u>it is necessary to provide certain institutional conditions, such as the establishment of extension services for smallholder forest owners, and strongly encourages the formation of interest associations of forest owners in FBiH, as well establish an Advisory Service for PFOs.</u>
Wood Industry Development Strategy for the period 2016 - 2025 (Draft)	This Strategy is still in draft version. The aim of this document is to highlight the general characteristics of the wood processing sector and to determine the measures and activities in order to make the wood processing sector one of the key economic sectors in FBiH. The wood processing sector, together with the forestry sector, represents a great development opportunity, so it is important that all interested	<u>There are no objectives related to PFOs.</u> However objectives related to the cooperation between wood processing sector and forestry sector are foreseen as well as the implementation of Forestry Program of FBiH. The long-term objective No. 3.1.1. foresees the integration of the

Strategic document	Description and main objectives of the strategic document	Objectives and measures related to PFOs
	parties, like FBiH Government and its ministries (Ministry of Energy, Mining and Industry and Ministry of Agriculture, Water Management and Forestry) closely cooperate and coordinate their activities in order to achieve the objectives of this Strategy.	forestry sector with wood processing sector through the creation of an interdepartmental group for strategic development and creation of a dominant export sector. Short-term objective for the forestry sector related to the aforementioned long-term objective is: Implementation of the FBiH Forestry Program, and with special attention to the relations between the Forest Economic Companies and wood processing industry in accordance with long-term objective 3.1.1
Environmental Protection Strategy of FBiH 2008-2018	This Strategy contains objectives and measures related to environmental protection in general (particularly nature protection, air protection, waste management, use of natural resources etc.). There are some measures related to the forestry sector. These measures contain activities for adequate forest management and introduction of FSC, as well as for adequate waste management in the forestry sector.	<u>There are no specific measures related to PFOs.</u>
Strategic Plan and Programme of the Energy Sector Development of FBiH	FBiH Government adopted this strategic plan and program in March 2009. It covers the period from 2010 to 2030. The purpose of this Strategic Plan and Programme is to make a professional analysis of the existing situation, define the requirements and possibilities of the development of the energy sector of FBiH, in each subsector taking into account energy sector development intensity in BiH, the region and EU.	Even if there is a strong connection between wood biomass consumption and forestry sector, <u>there are no specific measures related to the forestry sector and to PFOs.</u>
Framework Energy Strategy of FBiH until 2035 (draft)	The long-term objective of this Framework Energy Strategy is to create a competitive and long-term sustainable energy system, within the available capacities, resources and adequate dynamics. In order to achieve this goal, five key priorities have been defined. One of the key priorities is efficient use of resources. This document is still in draft version.	
CS level		
Development Strategy of CS until 2020	Development Strategy of CS is a strategic document that guides the development, defines development priorities and presents a roadmap for the overall development of CS, taking into account all its dimensions: economic, social, environmental and spatial. This Strategy contains strategic and operative objectives, measures for each operative objective and projects for the implementation of proposed measures. It also contains measures and projects related to operative objectives in the forestry sector. Among these projects are introduction of FSC and adequate forest management, provision of expert and advisory support to forestry business	<u>There are no specific measures related to PFOs.</u>

Strategic document	Description and main objectives of the strategic document	Objectives and measures related to PFOs
	entities, improvement of the legal framework for forests and harmonization with international regulations.	
Environmental Action Plan for SC (2016-2021) (Draft)	<p>This Action Plan is still in Draft version and the Ministry of Spatial Planning, Construction and Environmental Protection sent it to other relevant ministries of CS in order to obtain their opinion, before submitting the Action Plan to the Canton Assembly for adoption. This document has two purposes, one is to unify, analyse and structure data and assessment of the state of the environment in a single document, and the other is to provide the basis for the planning and implementation of environmental protection measures in the CS area.</p> <p>This document contains the description of private forest management and emphasizes the problem that structure of forests and forest land in private ownership of CS is less favourable than the structure of forests and forest land in state ownership.</p>	<u>There are no specific measures related to PFOs.</u>

4.3 Institutional framework

On the BiH level, there is no relevant institution for forestry except the Ministry of Foreign Trade and Economic Relations (MOFTER) which is responsible for tasks and duties falling within the jurisdiction of the State of BiH, including defining policies and basic principles, coordinating activities and consolidating entity plans with those of international institutions in the areas of agriculture, energy, environmental protection, use of natural resources, forests and tourism.

On FBiH level there is a Forestry and Hunting Department within the Ministry of Agriculture, Water Management and Forestry with responsibilities for legal matters and all aspects relating to the forest law and related legislation. It acts as a permitting unit; e.g. change of land use and forest management planning at federal level.

According to the existing Law on Forests from 2002, the forests are governed by Federal Forest Administration with head offices in Sarajevo, and coordinating the Cantonal Administration for Forestrys. The forests governance is conducted by the cantonal public companies (Forest Economic Company), organized in nine Cantons (although no company for Posavina due to lack of forest area).

In CS, Sector for Agriculture, Water Management and Forestry within the Ministry of Economy carries out administrative and other expert tasks relating, inter alia, to the monitoring of the state of forestry and hunting, forest protection, afforestation of degraded forests, development and improvement of forestry, planning of investments in forestry, drafting of regulations, analysis and reports. Cantonal Administration for Forestry is within the aforementioned Ministry and performs administrative and other professional tasks related to the exercise of the competence of the CS in the field of forestry. Cantonal Forest Inspection performs overall inspection services safeguarding the implementation of all actions relating to the Law on Forests in CS. Figure 3 below shows forest institutions on CS level.

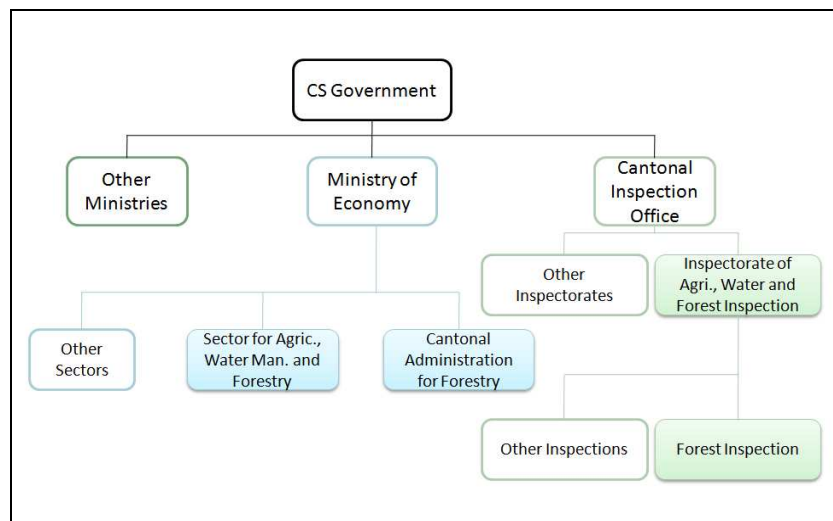


Figure 3: CS level forest institutions

Table 5 shows detailed responsibilities of institutions on the CS level in relation to PFOs and activities that are directly or indirectly connected to private forest management in CS.

Table 5: Review of institutions on CS level and their responsibilities in relation to private forest management in CS and PFOs

Institution	Responsibilities
Government of CS	<ul style="list-style-type: none"> Adopts the Cantonal Forest Development Plan, Adopts the decision on the establishment of a forest management area or revision of its borders, upon the proposal of the Ministry of Economy and on the basis of a professional study, Determines general criteria for the establishment of forest management areas, upon the proposal of the Ministry of Economy, Proclaims protective forests, upon the proposal of the Ministry of Economy or Municipalities with the previously obtained opinion of the Cantonal Administration for Forestry, Adopts the expenditure program developed by the Cantonal Administration for Forestry.
Ministry of Economy of CS - Sector for Agriculture, Water Management and Forestry	<ul style="list-style-type: none"> Responsible for the preparation, development and implementation of the Cantonal Forest Development Plan, Can apply for the establishment of forestry management areas or revise their boundaries, Approves the Forest Management Plans, <u>Issues approvals to legal entities for carrying out professional activities in private forests,</u> Keeps records of protective forests and forests with special purpose, Provides prior consent to deforestation, or changes to the use of forest land
Cantonal administration for forestry	<ul style="list-style-type: none"> <u>Collects and maintains a database on the state and development of all forests (including private forests), establishes and manages the cadastre of forests and forest land and the cadastre of the state and private forestry infrastructure for CS area,</u> Prepares draft version of the Cantonal Forest Development Plan, prepares and monitors the implementation of programs for the implementation of activities envisaged by the Cantonal Forest Development Plan, carries out the preparation procedure, finances, monitors implementation and keeps records of the validity of the Forest Management Plan for all forests in SC (including private forests), provides expert assistance and monitoring during the development of Forest Management Plans, Gives consent to the Annual Plans for the Implementation of the Forest

Institution	Responsibilities
	<p>Management Plan,</p> <ul style="list-style-type: none"> ▪ <u>Adopts Project Execution Documents for private forests and keeps a register of developed and adopted Project Execution Documents,</u> ▪ Keeps records of implemented activities and measures envisaged by the Cantonal Forest Development Plan, Forest Management Plan and Project Execution Documents, ▪ <u>Establishes a commission for the technical acceptance of works for private forests,</u> ▪ <u>Provides marking, counting, measurement, and issues approvals (statements) before tree harvesting in private forests,</u> ▪ Develops a plan and program for biological rehabilitation of forests, programs and plans financed from the Cantonal Budget, ▪ <u>Provides sanitary cuts in private forests if forest owners cannot carry out sanitary cuttings themselves,</u> ▪ Monitors the health condition of forests, performs diagnostic tasks and monitors the state and degree of damages, ▪ In cooperation with forest users and the competent civil protection authority, develops programs of integral protection of the forest and fire protection plans and maintains adequate databases, ▪ <u>Organizes consultations and provides expert and advisory assistance to users of state forests and owners of private forests,</u> ▪ Develops an expenditure program of funds based on allocation criteria for the allocation of Cantonal funds and submits it to the Cantonal Government for adoption.
Cantonal Inspection Office – Forest Inspection	<p>The Inspectorate of Agriculture, Water and Forest is a part of the Cantonal Inspection Office. Forest Inspection acts as a sector of the aforementioned Inspectorate and employs Forest Inspectors responsible for:</p> <ul style="list-style-type: none"> ▪ Inspection supervision in the implementation of the Law on Forests of CS and regulations adopted pursuant to the aforementioned Law. ▪ Inspection and supervision of all forestry planning documents, controls their execution, business books and other documentation, ▪ Control of all works, objects, devices, cutting units, as well as all places where wood is harvested, stored, processed, exported or placed on the market, ▪ Control and monitoring of the implementation of forestry standards, ▪ Control of the selection and marking of trees for harvesting, ▪ Temporarily suspension of cutting and other actions that are not in accordance with the provisions of the Law on Forests of CS and other forestry related regulations, until the final decision of the competent authority, ▪ Stop transport vehicles and control the accompanying documentation for the transportation of forest products and non-wood forest products on regional and main roads, ▪ Control of the execution of all activities foreseen by the Project Execution Documents, Forestry Management Plan and Annual Plans, ▪ Control of how the health condition of the forest is being carried out and the measures for combating plant diseases and the amount of the damage, and orders the elimination of deficiencies and the implementation of measures, if it is determined that the user / owner of the forest does not comply with the regulations and health protection measure, ▪ Review of forest fire protection plans and implementation of planned measures, ▪ Review the implementation of measures for forest and forest land protection from unlawful appropriation and use, and illegal construction of facilities and, if necessary, undertake appropriate measures.

In addition to the aforementioned institutions in Table 5, Table 6 below lists other institutions whose role is of big relevance for the forest sector and PFOs.

Table 6: *Review of other institutions in CS of relevance for the forest sector and their responsibilities*

Institution	Responsibilities
Chambers of Commerce (Foreign Trade Chamber of BiH, FBiH Chamber of Commerce, Cantonal Chambers of Commerce)	<p>The Chambers of commerce are relevant because of their role in promotion of domestic companies and cooperation and creation of relations between companies from different sectors. They can help to place wood or non-wood products on the market. Within the FBiH Chamber of Commerce there is the <u>Forestry and Wood Industry Group</u> which acts as a Chamber Association. The main tasks of this group are:</p> <ul style="list-style-type: none"> ▪ Representation of the interests of its members, ▪ Monitoring of the laws and bylaws in forest and wood industry sectors, ▪ Initiative for harmonization of the legal regulations, ▪ Interactive relationships between members of the group, ▪ Connection with similar associations in Europe and the world, connection with foreign partners, ▪ Organization of educational workshops, seminars and study trips.
Federal Administration for Geodetic and Property Legal Affairs	<ul style="list-style-type: none"> ▪ Planning, contracting and monitoring implementation of works pertaining to the immovable property cadastre, land cadastre and public utilities cadastre and automatic processing of cadastral data, ▪ Performing inspection monitoring of works pertaining to the immovable property cadastre, land cadastre, public utilities cadastre, automatic processing of cadastral data, handover of cadastre data to the courts (land registry offices), ▪ Establishing and operating cadastral information system, ▪ Keeping statistics pertaining to the immovable property cadastre, land cadastre, public utilities cadastre and automatic processing of cadastral data,
Cantonal Administration for Geodetic and Property-Legal Affairs	<ul style="list-style-type: none"> ▪ Performs administrative and other professional tasks related to the exercise of competence of CS in the field of geodetic and property legal affairs, ▪ Performs tasks of registering the property of CS by entities, on the basis of the evidence on the registered acquired right, ▪ Acts on the requests of subjects for registration of rights in the land registry of the competent court, ▪ Drafting of laws and other normative legal acts in the field of property legal and normative affairs.
Cantonal Public Institution for Protected Natural Areas	<ul style="list-style-type: none"> ▪ Protection, maintenance and promotion of protected areas in order to protect and preserve the original natural values, ▪ Ensure the uninterrupted development of natural processes and the sustainable use of natural and cultural-historical goods, ▪ Supervision of the implementation of conditions and measures of protection. ▪ According to the Law on Nature Protection (O.G. of FBiH, No. 66/13) protection of natural value in the protected area may be entrusted to the owner or the user of the right to real estate with a contract that regulates mutual rights and obligations between the institution managing the protected natural value and the owner or the beneficiary of the right to real estate. The aforementioned contract contains also provisions related to the amount of the fee for the implementation of prescribed protection measures that the owner or the user receives for the implementation of protection measures. If the natural value is a protected wild species / subspecies, the contract is signed by the Federal Ministry for Environmental Protection.
Fund for Environmental Protection of FBiH	<ul style="list-style-type: none"> ▪ Activities of this Fund are collection and distribution of financial resources for environmental protection in FBiH, among which is the preservation of protected natural areas. This means that institutions established for management of protected area are entitled for funds from the Fund for Environmental Protection of FBiH for the implementation of projects related to natural resources protection. ▪ According to the Law on Nature Protection (O.G. of FBiH, No. 66/13) in the budget of FBiH and Fund for Environmental Protection of FBiH, funds are provided for the protection of natural values, for monetary and other incentives prescribed by this Law,

Institution	Responsibilities
	for compensation of damages caused by protected animals, for compensation to owners and users of real estate rights in protected natural values that are of international, state and federal importance.

4.4 Stakeholder analysis

Stakeholders identified within the forest sector in FBiH can be grouped as follows:

- Federal Ministry of Agriculture, Water Management and Forestry
- Federal Forestry Administration
- Federal Ministry of Environment and Tourism
- Federal Ministry of Physical Planning
- Federal Ministry of Education and Science
- Federal Ministry of Energy, Mining and Industry
- Government Offices of FBiH: Government Office for Legislation and Compliance with EU Regulations, FBiH Gender Center
- Federal Government Offices- Federal Office for Geodetic and Property Legal Affairs, for Inspection Affairs
- Special Federal Bodies - Civil Service Agency, Privatization Agency
- Chambers of Commerce: Foreign Trade Chamber of BIH, FBiH Chamber of Commerce, Cantonal Chambers of Commerce
- Association of Municipalities and Cities of FBiH
- Canton of FBiH: cantonal assemblies and cantonal governments
- Cantonal Ministries responsible for Forestry Affairs
- Cantonal Administration for Forests
- Cantonal forestry companies - forest users
- Developing partners in the forestry sector - wood processing industry
- Companies for inventory and projecting in forestry, surveying and other work in forestry
- Forestry Executing Companies
- Professional Forestry Associations
- Non-governmental organizations - national, ecologically oriented
- Faculty of Forestry of the University of Sarajevo
- Political parties
- Local communities - municipalities
- PFOs.

Some stakeholder could have little interest, but could be very influential in the sector and vice versa. For better understanding and overview a Stakeholder Matrix is shown in Table 7, where the interest and influence of stakeholders in the forestry sector of FBiH is shown. This matrix has been prepared in terms of the decision making, impact on policy and operation of the sector.

Table 7: Stakeholder Matrix for the forestry sector of FBiH

		Interest of Stakeholder	
		Low	High
Influence/power of stakeholder	High	<ul style="list-style-type: none"> Association of Municipalities and Cities of FBiH Federal Ministry of Environment and Tourism Federal Ministry of Physical Planning Local communities - municipalities Political parties Federal Ministry of Education and Science Federal Ministry of Energy, Mining and Industry 	<ul style="list-style-type: none"> Canton of FBiH: cantonal assemblies and cantonal governments Cantonal Ministries responsible for Forestry Affairs Federal Forestry Administration Federal Ministry of Agriculture, Water Management and Forestry
	Low	<ul style="list-style-type: none"> Chambers of Commerce: Foreign Trade Chamber of BIH, FBiH Chamber of Commerce, Cantonal Chambers of Commerce Companies for inventory and projecting in forestry, surveying and other work in forestry Developing partners in the forestry sector - wood processing industry Faculty of Forestry of the University of Sarajevo Federal Government Offices- Federal Office for Geodetic and Property Legal Affairs, Federal Office for Inspection Affairs Forestry Executing Companies Government Offices of FBiH: Government Office for Legislation and Compliance with EU Regulations, FBiH Gender Centre Non-governmental organizations - national, ecologically oriented PFOs (unorganized) Professional Forestry Associations Special Federal Bodies - Civil Service Agency, Privatization Agency 	<ul style="list-style-type: none"> Cantonal Administration for Forestry Cantonal forestry companies - forest users

Stakeholders other than the public forest administration and forestry companies are slowly improving their technical, managerial, and leadership capacities.

Training activities conducted by the Association of Forestry Engineers of FBiH focused on specific forest policy instruments (forest certification) and regulation (EU Timber Regulations), with the aim to educate forestry professionals. In combination with similar efforts, these activities generated some improvements in the social capital in the forestry sector.

Capacity improvement, however, has been largely focused on public forest administration and employees of forestry companies, with no substantial participation by non-governmental and private sectors.

Integration of local producers into improved market opportunities mainly related to a United States Agency for International Development (USAID) project to develop a wood/ furniture cluster-based initiative.

Targeted activities in this initiative included company-level assistance on product development, workforce development, training on international technical standards, and building supply chain linkages among companies.

For public forestry companies, some channels to obtain capital were provided by various international organizations such as the World Bank, FAO, USAID, and the Swedish International Development Cooperation (SIDA). In cooperation with governmental institutions, the World Bank implemented several projects in forestry focused on forest recovery, development, and forest protection. Some strategic projects in FBiH – such as development of national standards for forest certification, a federal action plan to combat illegal activities, a federal forestry development programme, and the second state forest inventory – have been financed or co-financed by the World Bank.

5. Specificities of the Smallholder Forest Sector in CS

5.1 Specificities of the target group - PFOs

The target group and the main beneficiaries of this pilot project intervention are the smallholder forest owners from the territory of the FBiH, more specifically from Canton Sarajevo. To date there are app. 250,000 non-organized and isolated forest owners in FBiH, and app. 17,000 forest owners in CS. These 17,000 forest owners hold 29,800 forest plots (average 1.75 land plots per owner).

PFOs from CS are mainly male, which is a result of the socio-cultural characteristics of BiH where inheriting of forest property goes along the male line and women rarely share formal ownership rights with their husbands. They are mainly a rural, low educated and low-income population (often-marginalized group at risk of poverty). Half of the smallholder forest owners are retired or unemployed, while more than one third are lower-level employees, manual workers and farmers. The majority of the target group have no higher education and in some cases, they do not have high school or even elementary school qualifications.

Private forest owners are not organized into association and not aware of the benefits of organized action. Provided data indicates signs of readiness to organize³⁵.

Results of the survey

Results of the survey on PFOs in CS conducted in 2017 provide an average profile.

Socio-economic information on PFOs in CS: In the analysed sample (N=339), gender ratio was 90:10 male to female.

³⁵ FAO (2015). Analysis of the forestry sector in Bosnia and Herzegovina.

The youngest respondent in the sample is 29 years old and the oldest respondent is 85 years old. The average age in the sample is 59.5 years which indicates that PFOs of CS are a mature or elderly population.

The majority of PFOs of CS have a four-year high school education (31 %), app. every fifth PFO has a elementary school diploma (23 %) while 3.5 % do not have a formal education (Figure 4).

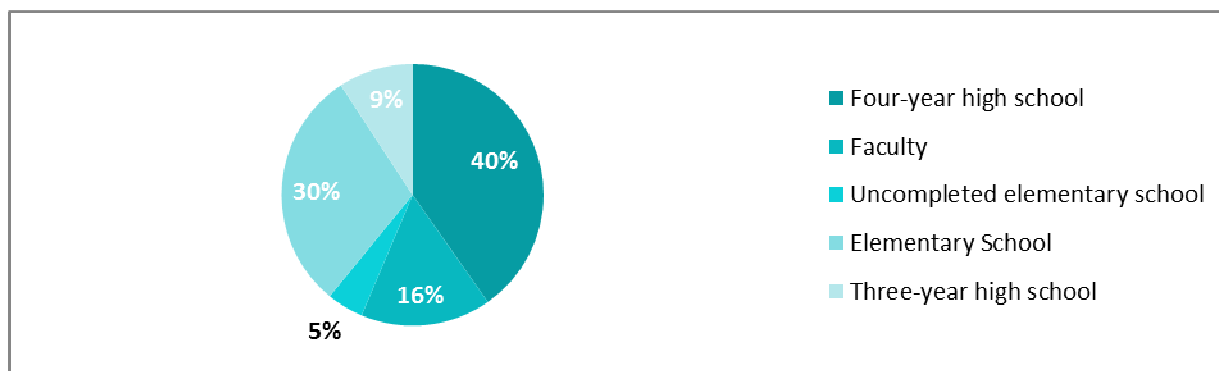


Figure 4: Education level of respondents (PFOs)

It is interesting that 12.4 % (N=42) of PFOs have an educational background in forestry. 6 PFOs did not answer this question.

48.7 % of PFOs are retired, 14.2 % are unemployed. App. 10 % of PFOs are private entrepreneurs. Only 3.5 % of PFOs are engaged in agriculture. 23.6 % of PFOs are employed, and majority of them work in the public sector.

The average income of the households of 44.2 % of the respondents is lower than 500 BAM (255.66 Euros). The relative poverty line is 416.40 BAM a month per equivalent adult³⁶, so these respondents/households could be considered as poor.³⁷ Every third respondent is coming from households with average income in the range of 500-1,000 BAM (255.66- 511.32 Euros). Figure 5 shows the average household income distribution in BAM.

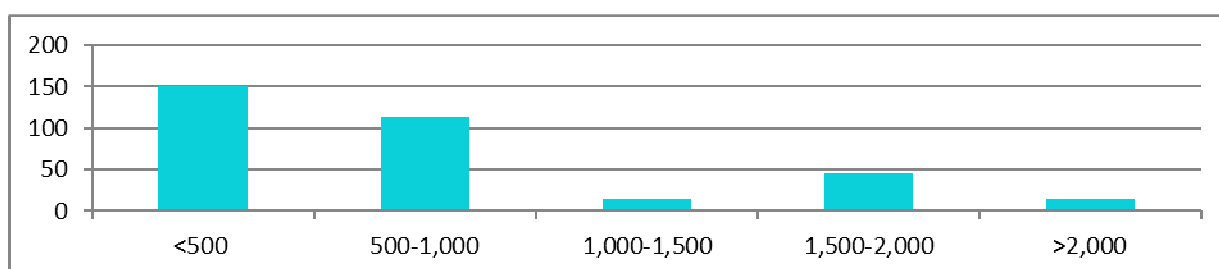


Figure 5: Average income of respondent's households in BAM

Information on their interest: According to the survey, the majority of PFOs are interested in their forests property. 37.2 % of respondents said that they have a very big interest in their forest, and an

³⁶Institute for Statistics of FBiH (2012) First Release, No. 21.3. Sarajevo.

³⁷Agency for Statistics of BiH (2011).Household Budget Survey in BiH. Sarajevo.

In 2011, 17.1 % of the population in FBiH was living in relative poverty. Every sixth household is considered poor.

additional 38.9 % said that they have a big interest in their forest. Only 8.8 % said that they have a small interest in their forest property. 10.6 % were neutral and 4.4 % did not answer this question.

Livelihood

According to the PFOs, their forests affect their income or livelihood to a very small extent.

Above of 50 % of all PFOs in the sample do not have any positive effects on their income. However, significantly more PFOs who use wood for their own needs reported to having some impact (a little or much) to their sustenance/livelihood. Every third PFO consider that his forest contributes to his livelihood³⁸.

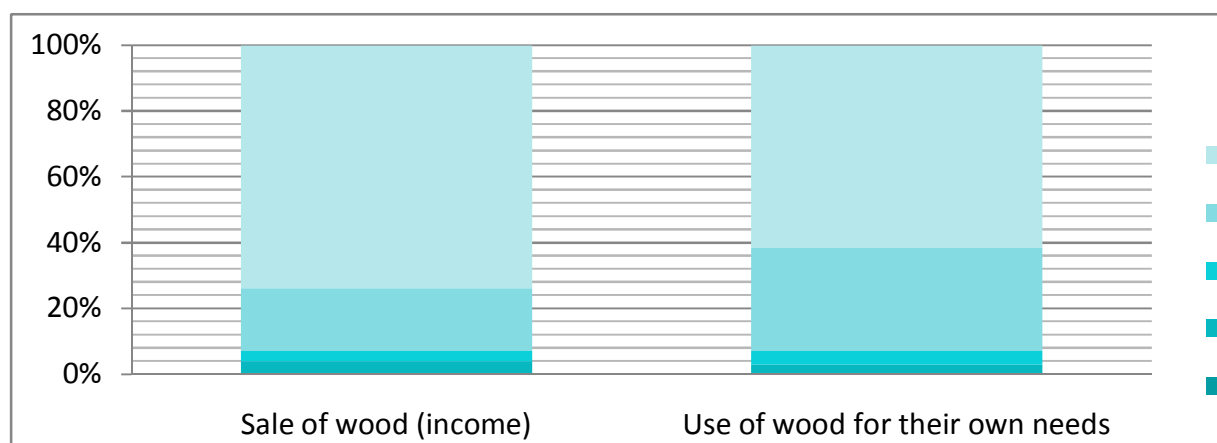


Figure 6: Answer to the question "How much exploitation of your forests affects income or livelihood of your household "

The socio-economic background of PFOs of CS clearly refers to important role of private forests as a natural capital for livelihood security of these people and their families.³⁹

Textbox 4: Specificities of the PFOs in Denmark⁴⁰

Age distribution

-Below 30	0,5%
-30-39	3,2%
-40-49	13,7%
-50-59	28,1%
-60-69	32,5%
-70 and above	22,0%

The clear majority of PFOs are male. An estimated 95%. In terms of numbers, only a minority is economically dependent of forestry.

5.2 Specificities of the private forest sector

5.2.1 Forest Resources and Tenure

³⁸ E.g. if PFOs take fire wood from his forest he saved app. 300-500 Euros per year.

³⁹ Every third PFO has impacts to his sustenance/livelihood. That is benefit for app. 5,610 PFOs and their families, if we take into account total number of PFOs in SC.

⁴⁰ Survey conducted in 2016 amongst the 5.000 member of Danish Forestry Owners Association. The response rate equalled app. 4% of all PFOs in Denmark.

The total area of forests and forest land in the area of CS amounts to 82.999 ha. Taking into account the total area of the CS of 1,276.9km² (126,850ha), the forest cover is about 65%, which is above the average of BiH (average forest cover in BiH is about 55%).

Figure 7 shows map of the CORINA Land Cover for the CS according to the CLC 2012 data base.

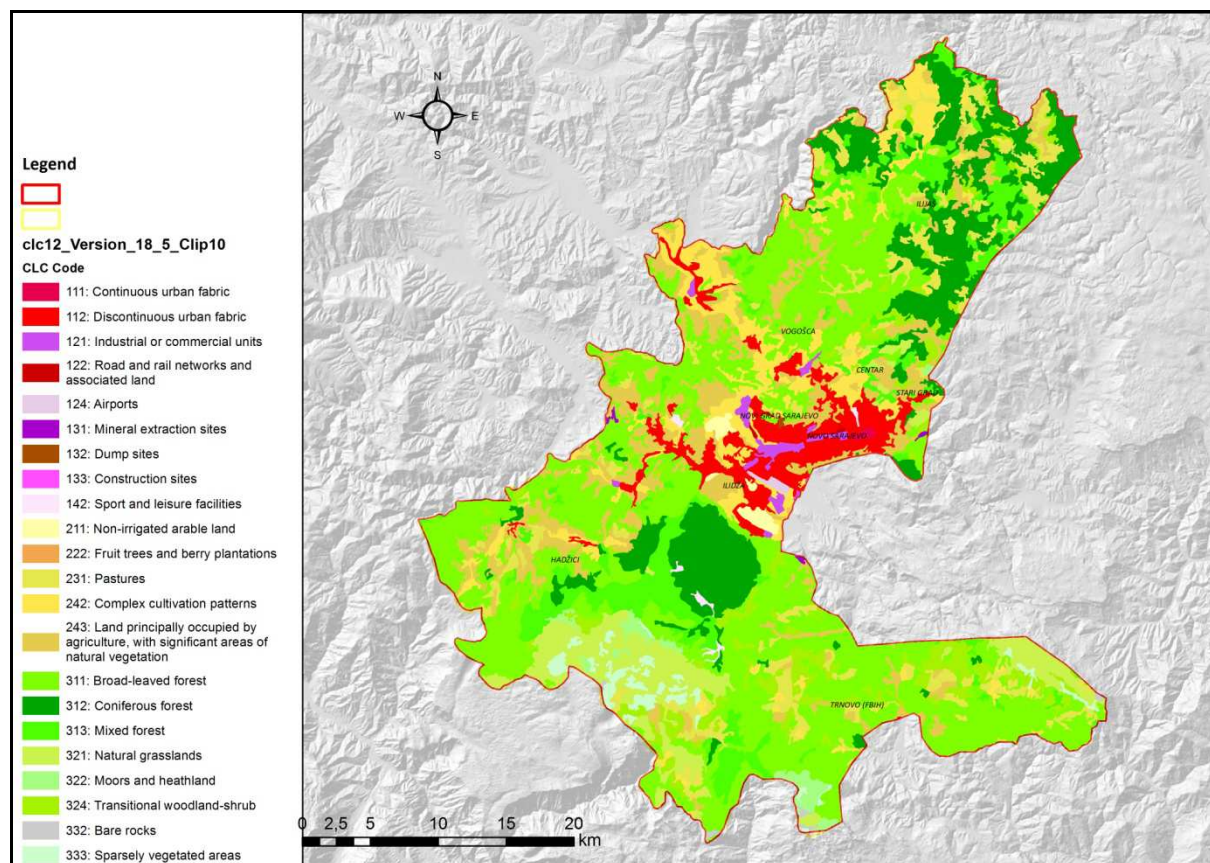


Figure 7: Map of the CORINA Land Cover for the CS
Source: CLC 2012 data base

5.2.2 Forest estate and distribution

Out of the total area of forests and forest land, 70.747ha (85%) are state owned (e.g. owned by CA) while 12.2523ha (15%) are privately owned, which is roughly equivalent to the forest-estate relations model in BiH (82:18).

There are app. 17,000 PFOs in CS who holds 29,800 forest plots (app. 1.75 land plot per owner). The average size of a private forest land plot is 0.411 ha.⁴¹

According to the state-owned area of forests and forest land, CS is in sixth place out of 10 cantons of FBiH. Smaller areas of forests and forest land, in comparison with CS, are in the ownership of the following cantons: Tuzla Canton, West Herzegovina Canton, Bosnia-Podrinje Canton and Posavina County.

Forest areas by type, ownership and forest categories in the

⁴¹ Cantonal Forest Administration. Interview (March, 2017).

Table 8 provides detailed information on the structure of forests and forest land in the area of CS.

Table 8: Forest areas by type, ownership and forest categories in the CS

Forest category	State forests		Private forests		Total	
	ha	%	ha	%	ha	%
High forests	34,752.80	49	6,069.33	49	40,822.13	49
Forest plantations	2,963.10	4	34.28	0	2,997.38	4
Coppice forests	9,283.70	13	5,219.33	43	14,503.03	17
Productive bare land	4,712.80	7	200.17	2	4,912.97	6
Unproductive bare land	11,098.30	16	607.92	5	11,706.22	14
Mined areas	7,936.10	11	121.05	1	8,057.15	10
Total	70,746.80	100	12,252.08	100	82,998.88	100

As shown in Table 8, there is an equal percentage share of high forests areas in private and public ownership. Share of coppice forest is significantly higher in private forests, while shares of other categories (unproductive bare land, productive bare land, forest plantation and mined areas) are higher in public forests. Taking into consideration this parameter, it can be concluded that the situation of private forests is more favourable than public ones.

It is interesting to note that there is still a significant amount of area suitable for reforestation (in total almost 5,000 ha - 608 ha in private ownership) which could in the future create new potential for enhancement of forest activities.

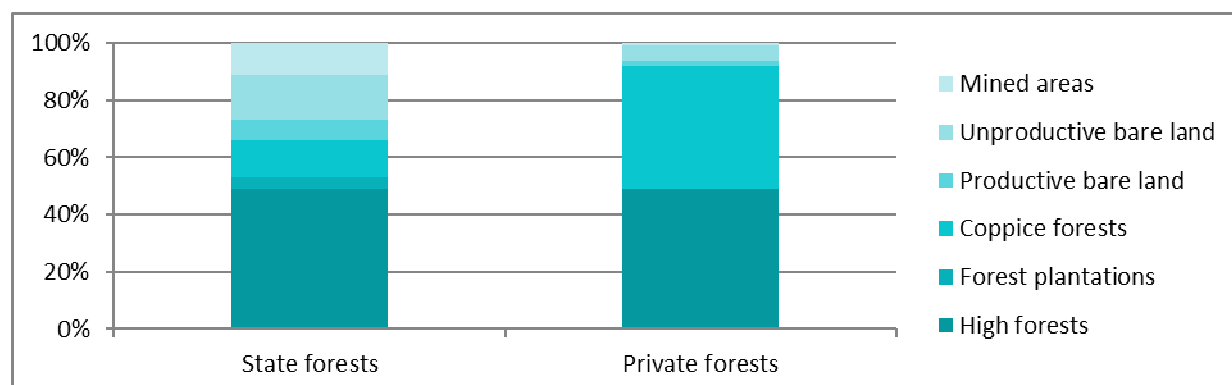


Figure 8: Comparative overview of percentage distribution of different forest categories for private and state-owned forests

Although data for private forests is unavailable, out of the total share of high forests (49%), about 6% is highly degraded forest, which is 4 times higher than the FBiH average (1.6%).

5.2.3 Forest condition

The extent and condition of forest resources largely define the ecological limits for management activities of forestry companies.

The growing stock of forests, in addition to the area of forests and forest land, is the most important indicator in forestry (especially from an economic point of view). The state of wood stock is calculated as bulky wood, and bulky wood implies all parts of the tree larger than 7 cm in weight excluding the volume of the stump.

Table 9: Forest growing stock, annual increment and available cut of forests in CS by type of ownership, categories of forest and tree species

State of growing stocks in state and private forests:								
	High forests						Coppice forests	
	Conifers m ³	m ³ /ha	Deciduous m ³	m ³ /ha	Total m ³	m ³ /ha	Deciduous m ³	m ³ /ha
Public	5,154,851	136	4,518,290	120	9,673,141	256	885,789	95
Private	672,321	110	762,208	125	1,434,529	235	466,981	89
Total	5,827,172	133	5,280,498	120	11,107,670	253	1,352,770	93
State of the annual volume increase in state and private forests:								
	High forests						Coppice forests	
	Conifers m ³	m ³ /ha	Deciduous m ³	m ³ /ha	Total m ³	m ³ /ha	Deciduous m ³	m ³ /ha
Public	157,260	4.1	89,141	2.36	246,401	6.53	17,190	1.85
Private	23,468	3.8	16,079	2.63	39,547	6.47	10,603	2.03
Total	180,728	4.1	105,220	2.40	285,948	6.52	27,793	1.91
State of annual available cut in state and private forests:								
	High forests			Coppice forests	Total			
	Conifers m ³	Deciduous m ³	Total m ³	Deciduous m ³	Conifers m ³	Deciduous m ³	Total	
Public	106,143	82,345	188,488	11,190	106,143	93,535	199,678	
Private	11,730	11,904	23,634	5,992	11,730	17,896	29,626	
Total	117,873	94,249	212,122	17,182	117,873	111,431	229,304	

By comparing key parameters, it can be concluded that there is no major significant difference between state and private forests in CS related to wood stock and annual volume increase, as follows:

- wood stock of conifer trees is lower in high private forests than in state ones by 20%.
- wood stock of deciduous trees in private high forests is higher than in state high forests (by 4%).
- wood stock of private coppice forests is lower than in public coppice forests (by 6%).
- annual volume increase is higher per ha in private deciduous forests (both high and coppice), although it is lower with conifers by 8%, compared to public forests.

5.2.4 Forest types

The dominant tree species in the CS are: beech, spruce, fir, oak, hornbeam and dwarf pine. There are numerous forest communities present in the area, with high biological diversity. However, detailed data on areas covered by different forest types are not available.

The map of the real/existing vegetation represents the plant cover at the moment of investigation. According to Figure 9, the most widespread forest types are: (i) forests of beech and fir with spruce (*Piceo-Abiati-Fagetum*) and (ii) beech forests (*Fagetum montanum*).

Legend

- Canton Border
- Municipality Border
- Urban Areas
- Rivers
- Main Roads

Type of Forest

- Frosty Fir Forest (*Piceetum montanum inversum*)
- Subalpine Beech Forest (*Fagetum subalpinum*) with Phytocenosis of Rocks and Sips
- Forests of White Pine and Fir (*Piceo - Pinetum*)
- Beech Forest (*Fagetum montanum*)
- Forests of Beech and Fir (*Abieti - Fagetum*)
- Forests of Beech and Fir with Spruce (*Piceo - Abiali - Fagetum*)
- Forests of Black Hornbeam, Thermophilic Beech Forest with Phytocenosis of Rocks and Sips
- Forests of Black Hornbeam, Forests of Black Pine, Thermophilic Beech Forest with Phytocenosis of Rocks and Sips
- Forests of Fir and Spruce (*Abieti - Piceetum*)
- Sessile Forest (*Quercetum petraeae montanum*)
- Forests of Sessile and Hornbeam (*Quercus - Carpinetum*)
- Mountain Pine Forest (*Pinetum mugi*) with Phytocenosis of Rocks and Sips
- Forests of Downy Oak and White Hornbeam (*Quercus pubescentis - Carpinetum orientalis*) or White Hornbeam Forest (*Carpinetum orientalis*)
- Forests of Downy Oak and Black Hornbeam (*Quercus - Ostryetum carpinifoliae*) or Black Hornbeam Forest (*Omo - Ostryetum*)
- Thermophilic Beech Forest (*Seslerio - Fagetum*, *Ostryo - Fagetum*, *Aceri obtusati - Fagetum*)

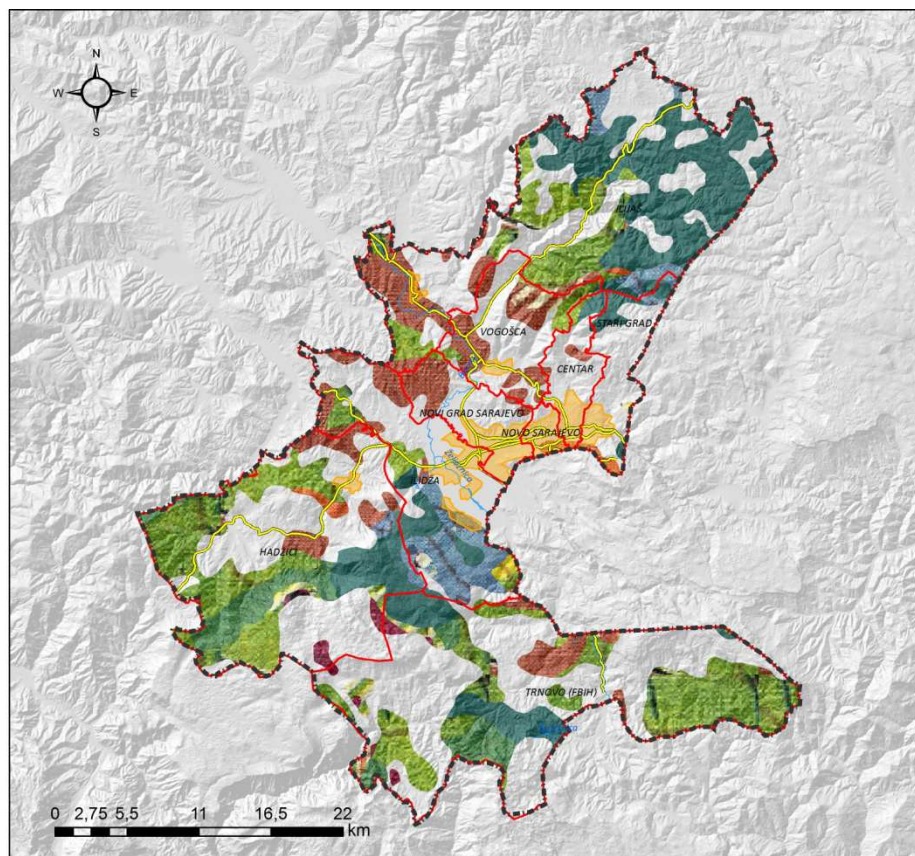


Figure 9: Map of the real vegetation

According to the map of the potential vegetation (Figure 10) dominant tree species would be beech, sessile and hornbeam.

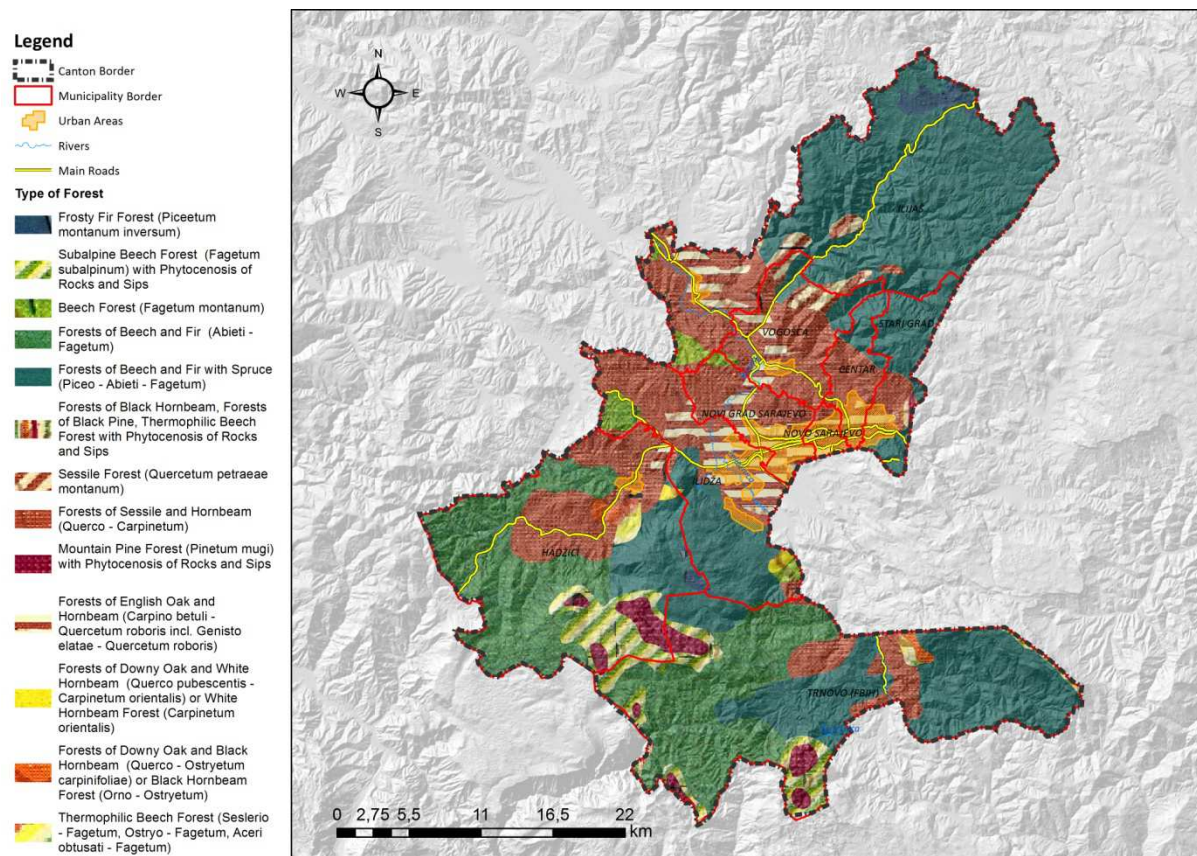


Figure 10: Map of the potential vegetation

According to the survey conducted, 22% of PFOs reported deciduous forest, 25.3% reported coniferous forests and 33.3% reported mixed forests. 19.4% of PFOs did not know the answer or did not answer this question.

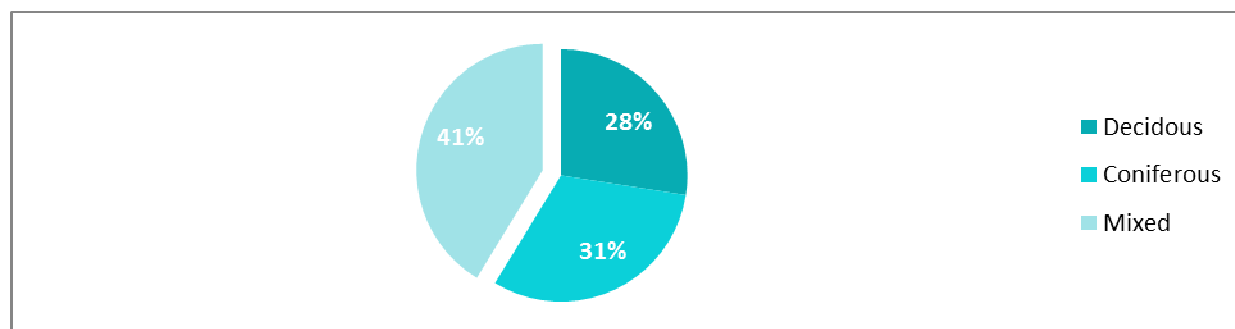


Figure 11: Type of private forests of CS according to the survey⁴²

The origin of private forests of CS according to their owners is: from seed (14.2%), coppice forest (10.6%) and mixed - both ways (35.4%). 27.4 % of PFOs did not know the answer and 12.4% did not answer this question.

⁴² Excluding invalid answers and "I do not know" answers.

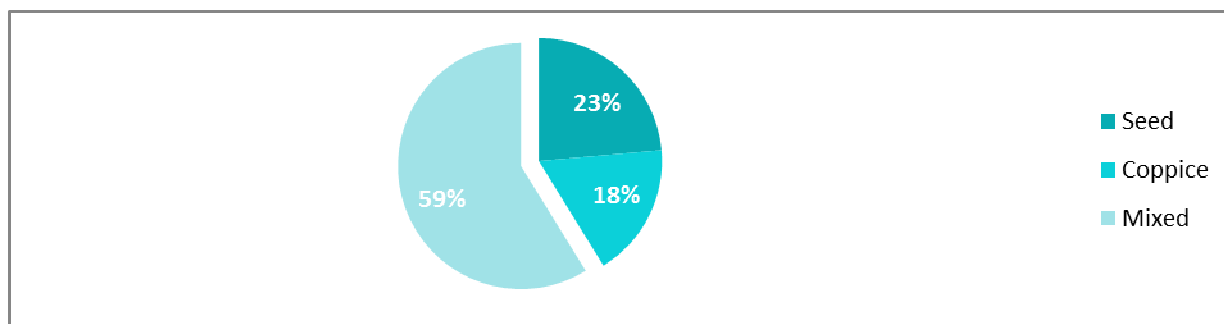


Figure 12: *Origin of the private forests of CS according to the survey*⁴³

5.2.5 Management of forest

FBiH and PFOs

Ministry of Economy - Cantonal Administration for Forestry - forest governor/manager

Public Utility Company- PUC "Sarajevo-šume" Ltd. Sarajevo - forest users

State forests and forest land in the area of CS are managed by the Ministry of Economy through its Cantonal Administration for Forestry. The ministry, through a contract, transfers management affairs (forestry professional activities) to PUC "Sarajevo-šume" Ltd. Sarajevo. In the area of CS there are four forest management areas (FMAs): (i) Gornjebosansko, (ii) Igmansko, (iii) Trnovsko, i (iv) Bistričko. Forest management plans (FMPs) - forest management basis, were adopted for all four FMAs.

Table 10 shows the period of validity of the FMPs for CS.

Table 10: *Information on the period of validity of the FMPs for state owned forests of the CS*

FMAs	Period of validity
Gornjebosansko	01.01.2013. - 31.12.2022.
Igmansko	01.01.2014. - 31.12.2023.
Trnovsko	01.01.2015. - 31.12.2024.
Bistričko	01.01.2015. - 31.12.2024.

Private forests are managed by their owners in accordance with the Law on Forests of the CS, by-laws and the provisions of the FMPs. The owner of a private forest makes a contractual agreement to transfer management affairs (forestry professional activities) to the Cantonal Administration for Forestry or other legal persons who are authorized for performing professional activities in private forests.

FMPs for private forests are adopted at the municipal level. All FMPs for private forests of the CS were adopted for the period 2008 - 2017. According to the Cantonal Administration for Forestry, new FMPs for private forests will be developed by the end of 2017. Until then, the old FMPs for private forests are applied.

Textbox 5: *Management of forest in Denmark*⁴⁴

App 76% of the forest area is cultivated under an even-aged system. Either as planted / sewed (67%) or naturally regenerated stands (9%). Only 15% of the forest area is characterized by multi-storage / age stand structures.

⁴³ Excluding invalid answers and "I do not know" answers.

⁴⁴ 'Skove og Plantager, 2016', Copenhagen University.

There is only little difference in the silviculture practiced under different land ownership / tenure (state and private).

The practice of near to nature forestry has increased during the last two decades. This will gradually change the forest stand towards multi-storage / age structure.

5.2.6 Current commercial use patterns

Every third PFOs benefits from his private forest, whether it's additional income or substantial income (decreasing household cost by using wood in various ways). Private forests are mainly used for firewood and small construction wood. Households in BiH are predominantly using firewood and charcoal. According to the Development Strategy of the Wood Industry, cutting for firewood in FBiH increased by 74,200 m³ from 2010 to 2015.⁴⁵

According to data from the Agency for Statistics of BiH, in FBiH 45.1% of the total energy commodities that are mainly used for heating, is wood, while 31.4% is coal. For house heating in FBiH, firewood dominates (84%), followed by electricity and coal with a little over 5%. The share of other energy commodities is negligible.

According to research⁴⁶, private forests are most commonly used as a additional supplement to firewood supplied from state owned forests due to increased demand for firewood in the autumn and winter periods. Because of the a market access problem, PFOs are more focused on selling their products on sight directly to wholesalers or customers. This is also related to the fact that private forests are mainly found in rural areas.

PFOs are also using their forests for exploitation of industrial and technical wood, but because of need for more sophisticated equipment and bigger forest properties, there is a small share of industrial and technical wood on the market from private forests.

Based on primary data from the survey for PFOs in CS it is possible to evaluate the following data:

- Selling and buying of forest plots by PFOs in the past 10 years
- Frequency distribution of private forest use by PFOs in CS
- Cutting of private forests for technical wood and firewood
- Logging of technical wood and firewood in private forest in m³.

Figure 13 shows share of PFOs that were and were not included in selling of their forest plots in the last 10 years.

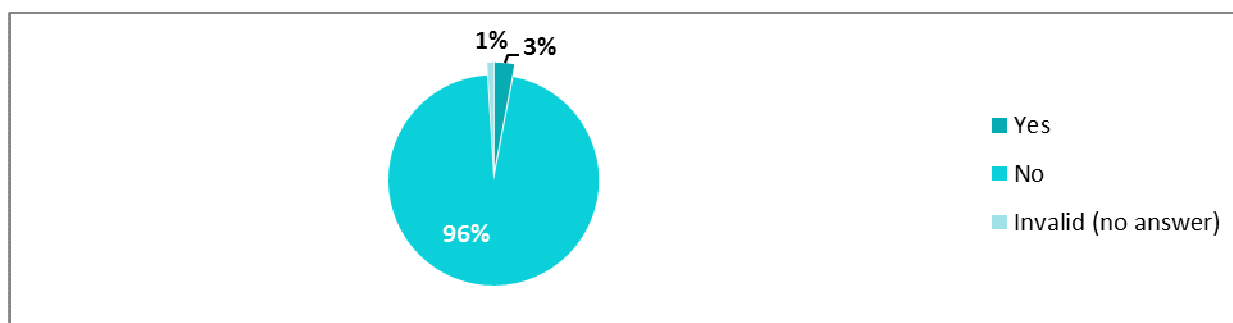


Figure 13: Selling of forest plots by PFOs in past 10 years

⁴⁵ Ministry of Energy, Mining and Industry of FBiH. 2015. Development Strategy of Wood Industry in FBiH for period 2016 – 2025. Mostar

⁴⁶ Phone interviews with companies that are distributing state owned firewood.

According to Figure 13, only 3% of PFOs have sold their forest plots in the last 10 years. 1% of PFOs did not answered this question.

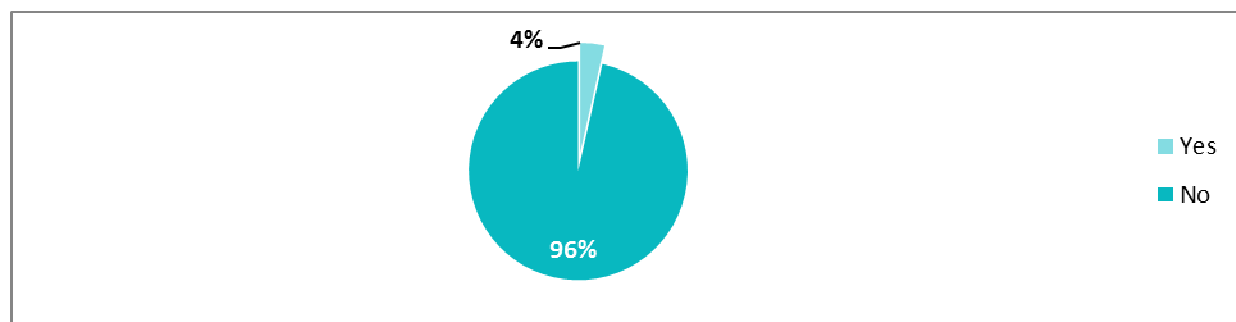


Figure 14: Buying of forest plots by PFOs in past 10 years

According to Figure 14, 4% of PFOs in CS bought forest plots for various purposes in the previous 10 years.

These two figures are showing that it is a bigger percentage of PFOs that are buying forest plots than selling. This can indicate that PFOs' interest for expanding their private forest area is present. There is also a significant number of private forests that are under protected area, where real estate transactions in those areas are banned by law. Recently, there has been a trend of selling forest plots to foreign citizens (which use them for real estate development), but there is no official data or statistics that can officially confirm these claims.

Figure 15 shows frequency distribution of way of use of private forests in CS, according to the PFOs statements.

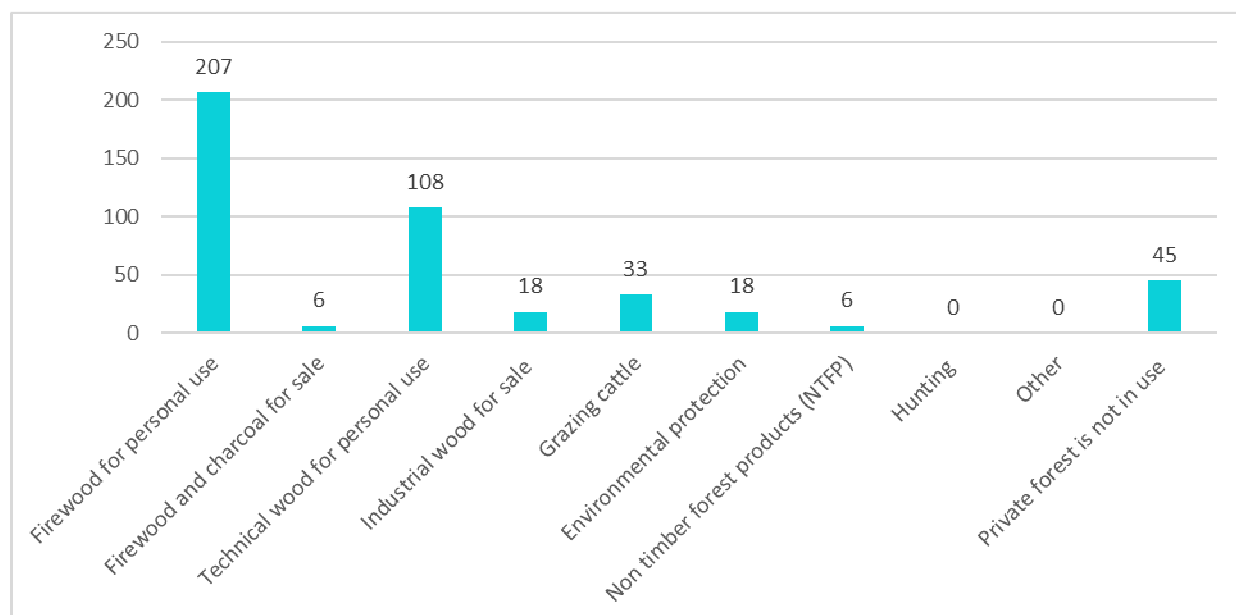


Figure 15: Frequency distribution of way of use of private forests by their PFOs in CS

The most common use of private forests is firewood for personal use, used by 61.06% PFOs (N=207). Secondly, 31.56% PFOs exploit their forests for technical wood for personal use. 13.27% of PFOs do not use their forests at all. Other activities that PFOs are performing in their private forests are grazing cattle, exploitation of timber, environmental protection, NTFP's and production of firewood and charcoal for sale.

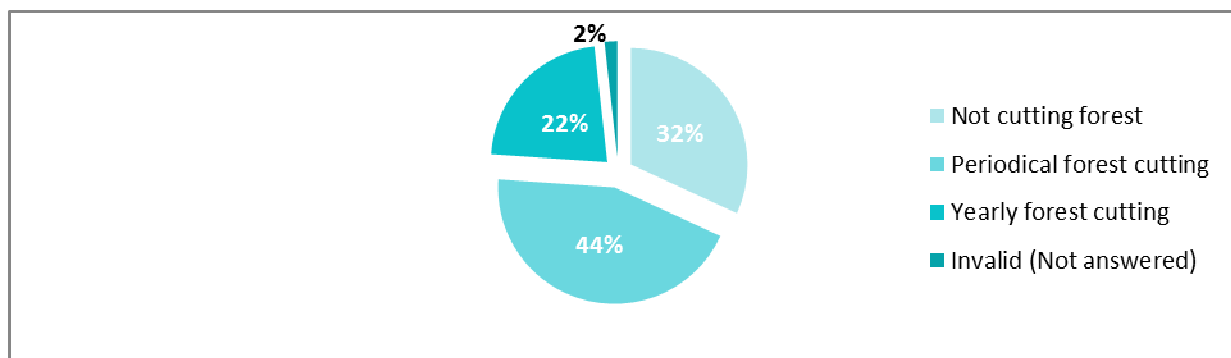


Figure 16: Activity of private forest logging for firewood

App. 44% PFOs use their forest for logging periodically, while 31.86 % PFOs are not cutting their forests. Number of PFOs which are cutting forest for firewood on yearly basis is 22.12 %. Invalid answers for this survey question is 1.77 %.

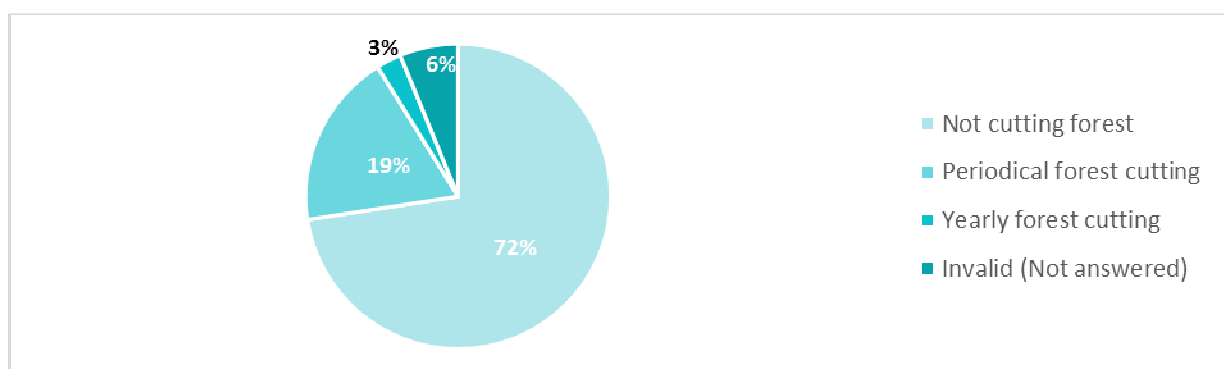


Figure 17: Activity of private forest logging for technical wood

According to Figure 17, 72% of PFOs in CS are not logging forests for technical wood, while 19% are periodically using their forest for logging of technical wood. Only 6% of PFOs are logging technical wood on a yearly basis.

According to the survey conducted, quantities of firewood logged from private forests in CS was in the range from 2 to 200 m³, with an average of 24.40m³ per PFO. Quantities of technical wood logged from private forests in CS varied from 3 to 100m³, with an average of 29.00m³ per PFO. From this data, it is possible to conclude that PFOs on average are cutting technical wood in bigger quantities than firewood by approximately 20%.

Textbox 6: Commercial use patterns in Denmark

- The number of private estates being sold annually is nominal. Less than 100 estates – out of app 25.000 – are changing owners annually through a formal sales process. An unknown number of estates are changing ownership by heritage.
- Most PFO's member of DFOA are to a various degree actively and practically involved in forest operations on their property. An estimated 25% of the PFOs are on a regular basis carrying out chainsaw activities. Mainly for stand maintenance and cutting of firewood.
- On behalf of its members, DFOA is annually selling app 625.000 m3 wood. In addition to this the owners are selling an estimated 75.000 m3 on their own. This volume is distributed to the following assortments:
 - App 35.000 m3 technical hardwood (fea expression)
 - App 175.000 m3 technical softwood
 - App 415.000 m3 bio energy for central heating plants
 - App 75.000 m3 firewood for household consumption.

5.2.7 Trade patterns / markets

The sale of industrial manufacturing of wood and products from wood and cork, except furniture and manufacture of articles of straw and plaiting materials was 695,560,000 BAM in 2016 (348,510,000 EUR), according to preliminary results. If we consider that total value of industrial products sold in 2016 was 14,449,000,000 BAM (7,240,000,000 EUR), then share of industrial manufacture of wood and products of wood and cork was 4.81 % of total industrial products sold in 2016.⁴⁷

This industry has big exporting potential and it is one of the few industries in BiH which has a high foreign trade surplus. There is a significant potential in the production and export of energy wood (wood pellets), engineered wood products, wood based boards, and also sawn wood products, veneer and furniture. The wood processing industry's production has increased by 30,8% compared to 2010 and 9,5% compared to 2014.⁴⁸

Production of industrial and technical wood in private forests

The institutes for Statistics of RS and FBiH provide a statistical bulletin for forestry with information on gross logging of wood assortments from private forests, but only for the entity level. The calculation is based on the number of felling permits issued by competent administrative authorities and estimations. According to the institute for Statistics of RS almost 100% of gross logging from private forests is contracted by the retail sector (sector for individual producers)⁴⁹, which is probably not the case in reality.

Table 11: *Retailed quantities of industrial and technical wood from private forest in 2013, 2014 and 2015*

Year	Industrial and technical wood in m ³					
	FBiH ⁵⁰			RS ⁵¹		
	Total	Hardwood	Softwood	Total	Hardwood	Softwood
2013	34,089	14,996	19,093	123,355	72,908	50,447
2014	41,215	17,409	23,806	117,041	70,290	46,751
2015	56,987	25,708	31,279	168,616	111,696	56,920

In the areas of industrial and technical wood in FBiH, softwood dominates, while in RS hardwood is more represented. In FBiH, there is a constant increase in production of hardwood and softwood.

The Agency for Statistics also provides prices of forest assortments in BiH for 2013, 2014 and 2015, including prices of firewood, industrial and technical wood from hardwood and softwood, so it is possible to estimate the total revenue from the sale of wood from private forests.

Table 12: *Prices of industrial and technical wood in BiH in 2013⁵², 2014⁵³ and 2015⁵⁴*

Year	Hardwood (Average between Industrial and Technical wood)		Softwood (Average between Industrial and Technical wood)	
	EUR	BAM	EUR	BAM
2013	83.45	166.55	89.47	178.57
2014	81.68	163.02	88.1	175.83

⁴⁷ Agency for Statistic of BiH. 2016. Production and sale of industrial products in BiH. Sarajevo

⁴⁸ UNECE. 2015. BiH Market Statement. Sarajevo

⁴⁹ Institute for Statistic RS. 2017. Statistical Bulletin. Banja Luka and Institute for Statistic FBiH. 2016. Statistical Bulletin. Sarajevo

⁵⁰ Institute for Statistic FBiH. 2016. Statistical Bulletin. Sarajevo

⁵¹ Institute for Statistic RS. 2017. Statistical Bulletin. Banja Luka

⁵² Agency for Statistics of BiH. 2013. Prices and price indices of forest assortments in BiH. Sarajevo

⁵³ Agency for Statistics of BiH. 2014. Prices and price indices of forest assortments in BiH. Sarajevo

⁵⁴ Agency for Statistics of BiH. 2015. Prices and price indices of forest assortments in BiH. Sarajevo

2015	83.03	165.71	89.46	178.54
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Taking into consideration prices from Table 12, Table 13 provides an overview of the expected/estimated revenues of the production of industrial and technical wood from the private forest sector for the period 2013 – 2015.

Table 13: Revenue from hardwood and softwood in industrial and technical wood from PFOs in FBiH

Year	Retailed quantities of industrial and technical hardwood in m ³	Average price of industrial and technical hardwood in BAM	Revenue from industrial and technical hardwood in BAM	Retailed quantities of industrial and technical softwood in m ³	Average price of industrial and technical softwood in BAM	Revenue from industrial and technical softwood in BAM
2013	14,996	83.45	1,251,416	19,093	89.47	1,708,250
2014	17,409	81.68	1,421,967	23,806	88.10	2,097,308
2015	25,708	83.03	2,134,535	31,279	89.46	2,798,219

Table 13 presents estimated revenues for retailed industrial and technical wood from the private forest sector in FBiH. Estimated revenues for both hard and softwood were constantly increasing in the period from 2013 - 2015. The highest revenue for retailed industrial and technical hardwood was in 2015 where it was assumed that private forest sector generated 2,134,535 BAM. This revenue increased from 2013 by 58.63%. The highest revenue for retailed softwood in the industrial and technical wood sector was in 2015, where it was assumed that PFOs generated 2,798,219 BAM. This revenue increased from 2013 by 61.05 %.

Since there is no relevant data for CS, based on the survey, it has been estimated that PFOs in CS market 26,129 m³ of industrial and technical wood per year⁵⁵, and by previously given prices estimated potential revenue for CS is 2,253,495 BAM annually, for both hardwood and softwood.

Firewood

Hardwood is mainly used as a firewood, mostly because of its caloric value. The next three tables present quantities, prices and revenues of firewood from the private forest sector in order to estimate potential revenues from firewood originating from private forests.

Table 14: Retailed quantities of firewood from PFOs in 2013, 2014 and 2015

Year	Firewood (m ³)					
	FBiH ⁵⁶			RS ⁵⁷		
	Total	Hardwood	Softwood	Total	Hardwood	Softwood
2013	41,719	41,154	565	112,198	111,477	721
2014	42,119	40,606	1,513	97,934	97,157	777
2015	38,421	36,896	1,525	117,921	117,231	690

In both entities production is mainly based on hardwood.

In Table 14 it is possible to see quantities of hardwood and softwood from private forests used for firewood in both entities. Exploitation of hardwood from PFOs in FBiH has had a constant downturn of retailed quantities for the period 2013 -2015. Softwood from PFOs in FBiH has had a constant

⁵⁵ Taking in consideration that 5.3 % of PFOs are selling industrial and technical wood, and given that average quantity sold is 29.00 m³, estimation is that amount of industrial and technical wood placed on market by 17,000 PFOs is 26,129 m³ per year.

⁵⁶ Institute for Statistic FBiH. 2016. Statistical Bulletin. Sarajevo

⁵⁷ Institute for Statistic FBiH. 2016. Statistical Bulletin. Sarajevo

increase in retailed quantities for the period 2013 – 2015. Still, softwood has an insignificant share in total production (4%).

Table 15: Prices of firewood in BiH in 2013⁵⁸, 2014⁵⁹ and 2015⁶⁰

Year	Hardwood		Softwood	
	EUR	BAM	EUR	BAM
2013	50.64	101.07	25.49	50.87
2014	51.52	102.82	24.85	49.6
2015	51.72	103.22	22.65	45.21

Prices of hardwood firewood constantly increased in period 2013 - 2015, which is a crucial indicator for the potential of hardwood for production of firewood. Quantities of softwood for firewood have decreased in the period 2013 - 2015.

Table 16: Revenue from hardwood and softwood in firewood from PFOs in FBiH

Year	Retailed quantities of hardwood firewood in m ³	Average price of hardwood firewood in BAM	Revenue from hardwood firewood in BAM	Retailed quantities of softwood firewood in m ³	Average price of softwood firewood in BAM	Revenue from softwood firewood in BAM
2013	41,154	50.64	2,084,038	565	25.49	14,402
2014	40,606	51.52	2,092,021	1,513	24.85	37,598
2015	36,896	51.72	1,908,261	1,525	22.65	34,541

Table 16 presents revenues from retailed hardwood and softwood for firewood from private forests in FBiH. Revenues for both types of wood had same pattern; they increased in 2014 compared with 2013, but decreased in 2015 compared with 2014. Highest revenue for retailed hardwood for firewood was in 2014 where it is assumed that PFOs generated 2,092,021 BAM. Highest revenue for retailed softwood in firewood sector was in 2014 where it is assumed that PFOs generated 37,598 BAM.

Since there is no relevant data for CS, based on the conducted survey, it has been estimated that PFOs in CS market 7,051 m³ of firewood per year⁶¹, and by previously given prices estimated revenue for CS is 262,191 BAM annually for production of firewood in the private forest sector.

Textbox 6: Trade patterns in Denmark⁶²

Wood trade in Denmark is characterized by an import of app 8,3 million m3 round-wood-equivalents per annum. Export amounts to app 1,1 million m3 round-wood-equivalents per annum.

Wood for energy constitutes app 7% of the country's total energy consumption and app 30% of the total use of renewable energy. Wood for energy is the most important source of income for Danish PFOs.

⁵⁸ Agency for Statistics of BiH. 2013. Prices and price indices of forest assortments in BiH. Sarajevo

⁵⁹ Agency for Statistics of BiH. 2014. Prices and price indices of forest assortments in BiH. Sarajevo

⁶⁰ Agency for Statistics of BiH. 2015. Prices and price indices of forest assortments in BiH. Sarajevo

⁶¹ Taking in consideration that 1.7 % of PFOs are selling firewood wood, and given that average of sold wood is 24.40 m³, estimation is that amount of firewood placed on market by 17,000 PFOs in CS is 7,051 m³.

⁶² Survey conducted in 2016 amongst the 5.000 member of Danish Forestry Owners Association. The response rate equalled to app. 4% of all PFOs in Denmark.

'Skove og Plantager, 2016', Copenhagen University.

Due to relatively small and heterogenous supplies, wood from private forests is often traded through middlemen which holds supply contracts with the industry. By pooling supplies from PFOs, DFOA sells directly to the industry.

Denmark is favored by short distances to ports. Therefore, DFOA also export timber to various industries in Germany, Sweden, Holland etc. Export by rails to parts of Europe is also a profitable business undertaken by DFOA.

6. Main issues of the Smallholder Forest Sector in CS

6.1 State of private forests

The main problem regarding assessment of the state of private forests in CS is the lack of relevant reports / information on private forest, both at the level of the FBiH and at the cantonal level.

Due to decentralised administrative regulations in the country, there is not a continuous monitoring program aimed to generate information on the state of public and private forests and Sustainable Forest Management (SFM). However, the public forest administration at the federal level publishes annual statistical information on the state of public forests and forestry, which provides information related to the status of forests, activities in forest protection and afforestation, forestry production, financial data, etc.

According to available data from the Cantonal Administration for Forestry and the survey, the structure of private forest is in general favourable since high forests have the largest area share of 49% (6,069.33 ha). Surface under mines are significantly lower (1% - 121 ha) in comparison with the state forests (11%). It is interesting to note that there is still a significant amount of the area which is suitable for reforestation (608 ha in private ownership) which could create new potential for enhancement of forest activities in the future.

Wood stock in private forests of CS varies from:

- 89 m³/ha for coppice forests (lower than state forests),
- 100 m³/ha for coniferous high forests (lower than state forests), to
- 125 m³/ha for deciduous high forests (which is higher than wood stock in state deciduous high forests-120 m³/ha).

According to this, the average growing stock in private forests of CS is app. 104.6 m³/ha which is significantly lower than Europe's growing stock per hectare (154 m³/ha).⁶³

Annual volume increase in private forests of CS varies from:

- 2.03 m³/ha for coppice forests (higher than state forests),
- 3.8 m³/ha for coniferous high forests (lower than state forests), to
- 2.63 m³/ha for deciduous high forests (higher than state forests).

According to this, average annual volume increase in private forests of CS amounts to 2.8 m³/ha, which is almost two times lower than Europe's net annual increment per hectare (6 m³/ha).⁶⁴

Annual available cut in private forests of CS amounts to 29.626 m³, which is only 12.9 % total available cut from all forests in CS.

⁶³ <https://www.eea.europa.eu/soer-2015/europe/forests>

⁶⁴ Ibid.

The health status of private forests is not known since exact information is not available even for public forests for which reports are submitted.

There is no information available for forest communication or openness of private forests in FBiH (an indicator of the ratio of road communication in meters per hectare of forest area). The total length of all forest roads in FBiH (without data for the Herzegovina-Neretva Canton) is 11,663km, which is an average openness of 10.1m/ha. The average openness of the high forests is 12.1m/ha, while the openness of the other forest categories is around 5 m/ha. The Federal Forestry Administration does not have detailed reports on the state of forest roads and the works executed. According to the preliminary results of the Second State Forest Inventory, the total openness of forests and forest lands in the FBiH amounts to 9.3 m/ha.

According to the survey of PFOs in CS, the average distance of private forest plots to (forest) road amounts to 1.77 km. The minimum distance between the PFOs forest plots and their household is 0.3km and the maximum is 130km. 46% of analyzed plots are in close proximity to roads (distance <2 km). 9 respondents (2.7 %) did not answer this question.

Textbox 7: State of private forests in Denmark⁶⁵

The state of private forest in Denmark – at a glance:

- The total forest area in Denmark amounts to app. 625.000 hectares covering app 14% of the total land mass. Hereof is app 440.000 ha planted, 107.000 natural regenerated, 3.500 coppice and 74.500 other. Most forest is characterized as high forest.

-The distribution of standing volume of timber is characterized as follows:

- Private individuals 56%
- Private companies 12%
- Private foundations 6%
- State 19%
- Other public/state forest 6%
- Un-categorized private forest 1%

-The average growing stock is 213 m³/ha. Distributed to 57% for broadleaves and 43% for conifers respectively. There is not statistic difference between growing stock and ownership.

-The forest are characterized by app 50% native species and 50% exotic species respectively.

-The annual gross increment is estimated at 6,8 million /m³. This equals app 9,6 m³/ha.

-The annual logging is estimated at 3,5 million / m³. This equals app 5,8 m³/ha.

6.2 Private forest tenure, ownership and management

Land tenure and ownership

Land tenure and property rights are crucial social institutions that define opportunities and constraints related to the utilization of forests and sustainable forest management. Only minor changes happened in terms of land tenure and forest ownership rights related to the processes of restitution and denationalisation in FBiH. Although it is generally held that agrarian reform had a strong impact on private land ownership in the former Yugoslavia, the fact is that the land

⁶⁵ 'Skove og Plantager, 2016', Copenhagen University.

nationalisation process has mainly influenced private agricultural properties (fields and pastures) while the greatest part of private forest estates was already below the prescribed maximum.⁶⁶

The official number of PFOs in CS is not known (but estimated to be around 17,000) and there are several reasons for this: (i) land books and cadastre data is not completely accurate and some was destroyed during the war, (ii) forest land is mainly a subject of family inheritance but in many cases the process of formal ownership transfer is not officially completed, (iii) as the procedure of land partition among all successors is relatively expensive and time-consuming, in many cases the land is not designated to single physical persons (iv) the benefits the single owner could gain from obtaining his portion of the land are often lower than the costs. Thus, in many cases a group of people (usually members of the same family) own forest property collectively. They possess equal (so-called "ideal") portions of the land, know the borders in the field and use the land mainly sporadically and for their own needs.

Individual properties are fragmented and the number of owners is increasing as a result of continuous division owing to the inheritance processes. The fragmentation of the private forest property and the large number of plots (app. 1.75 land plot per owner with an average size of 0.41 ha) represent a problem in sustainable management of private forests.

According to the survey, the average area of private forest property in the sample is 14.11 dunams⁶⁷ (1.41ha). The smallest private forest property in the sample amounts to 1 dunams (0,1ha) and the largest property amounts to 75 dunams (7,5 ha). 37% of the respondents did not answer this question, which probably means that they do not know the area of their plot(s).

33.8% of the respondents possess more than one plot. The minimum number of plots in the sample is 2 and the maximum is 5. On average, PFOs of CS who possess more than one plot, possess 2.42 plots with an average area of 2.3ha (minimum is 0.3 ha and maximum is 6 ha).

In 89.4% of cases, the owners know their plot boundaries. 26.5% of PFOs stated that boundaries are clearly marked in the forest, 11.5% stated that boundaries are not marked in the forest and 47.8% of PFOs stated that boundaries are clearly marked in the cadastre. 10.6% did not answer to this question and 3.5% answered with "I do not know".

Problems with boundaries are reported by 4.4% of respondents as follows: unsolved property-ownership, unhelpful administration, different area (boundaries) indicated in cadastre and land register⁶⁸.

More than half of the respondents (54 %) are the sole owner of their private forest. PFOs who share their forest plot with relatives, share it in most cases with their siblings (19.5 %), cousins (13.3 %), their children (3.5 %) or their husband / wife (2.7 %).

The majority of PFOs are successors of their forest (92%) and 1.8 % of respondents bought their forest property. 6.2 % of PFOs both inherited and purchased their forest property. The smallest area purchased by these PFOs amounts to 1 ha and the biggest amounts to 35 ha. These PFOs bought on average an area of 11.85 ha.

⁶⁶ <http://www.fao.org/3/a-au015e.pdf>

⁶⁷ In Bosnia and Herzegovina and also Serbia, the unit is called *dulum* (дүлүм) or *dunum* (дунум). It is equal to 1,000 square meters. Conversion factors: <https://www.convert-me.com/en/convert/area/dulum.html?u=dulum&v=1>

⁶⁸ Refers to *Grunt- Gruntovnica* is a land register - official inventory of the state of all properties and real estate with all rights to land. In the countries that were under Austro-Hungarian rule (which introduced this model in this area) there are separated land register and cadastre, which is why it is necessary to harmonize these two land data sheet. Otherwise, due to the mismatch between the data in the land register and the cadastre, there is a problem for owners to obtain ownership

The majority of PFOs (92%) want to leave their forest property to their children, only 8% of respondents want to sell their forests property in the near future. In most cases they want to sell their forest property because of their financial situation (2.7%).

69% of respondents stated that they do not have any problems with their ownership and their forest property, 20% reported problems and 10.6% did not answer this question. The majority of PFOs reported problems with illegal cutting and usurpations (especially after the war), mines and mined areas, establishment of the protected areas (limited use or inability to approach to plots), non-updating of data in the cadastre and the problem with mismatch between the old and new cadastral survey.

Textbox 8: Land tenure and ownership in Denmark⁶⁹

The total number of registered forest properties is app. 23.000. 88% of all forest are between 0,5 and 20 hectares. The average private forest is app. 15 hectares, ranging from close to zero to app 6.000 hectares.

The ownership distribution in terms of area looks like this:

- Private individuals 58%
- Private companies 12%
- Private foundations 5%
- State 18%
- Other public/state forest 5%
- Un-categorized private forest 2%.

Management and bureaucracy

Traditionally, forest resource management in FBiH is entirely formulated by bodies that have constitutional authority (public forest administration) and is based on a hierarchical, top-down approach.

Taking into consideration that management of PFOs must be done in line with the Private Forest Management Plan which is adopted by the public forest administration (Cantonal Administration for Forestry), PFOs do not have a lot of opportunity to decide on the objectives of managing their forest property. Main problem is lack of participation and stakeholder cooperation in forest-related planning processes.

Exploitation of private forests by their PFOs is moreover limited with complicated bureaucracy (administration).

According to the FBiH Law on Forests from the year 2002, it is forbidden to harvest trees (within or outside forest areas), until they are properly marked (with a painted hammer), counted, measured and before a proper approval has been issued ("otpremni iskaz"). These are the official mandatory procedures of the Federal Ministry. The marking and measurement is done by the cantonal forestry enterprises (in the state forests), while private forest harvesting is monitored by the Cantonal Administration for Forestry.

Non-compliance with these requirements is subject to judicial punishment and measures of confiscation of the forest products and tools. These activities are in jurisdiction of forest guards, experts authorized for forest protection on behalf of the cantonal forest management company, as

⁶⁹ 'Skove og Plantager, 2016', Copenhagen University.

well as police representatives and authorized forestry inspectors. They also have the right to record and identify all persons which might occur in the areas of their jurisdiction.

Textbox 2: Step by step description of the process of forest cutting

Case study for one Municipality- Trnovo

Step 1. Submit a request to the Ministry of Economy of CS - Cantonal Administration for Forestry (response in a month).

Step 2. After approval, send the request to the Cantonal Administration for Forestry - district Municipality of Trnovo (to determine the date of the field visit).

Step 3. Representative of the Cantonal Administration for Forestry together with the forester come to the field and mark the trees (according to the allowable cut prescribed in the Forest Management Plan for that Municipality).

Step 4. Rent a woodcutter and bring him to the field (optional) or cut trees by themselves.

Step 5. Inform Cantonal Administration for Forestry -district Municipality of Trnovo about completed cutting activities.

Step 6. Same team from Cantonal Administration for Forestry - district Municipality of Trnovo comes to the field for inspection that only marked trees are cut (penalties if it is not the case).

Step 7. PFO should send registration ID of the vehicle that will transport tree trunks to the Administration for forestry Municipality of Trnovo in order to get proper approval or paper - delivery note ("*otpremni iskaz-otpremница*") valid for only one day. If the police officer stops a truck / tractor that transports wood from the forest and PFO does not have this paper - delivery note or other date is specified, PFOs will get a penalty. This means that the PFOs have only one day to transport wood and if the weather is bad and transport has to be postponed, then PFO must repeat the procedure.

Equally, and apart from the long and complicated administration, an even greater problem for PFOs is the costs which arises in this process.

Textbox 3: Total costs that one PFO needs to pay to get 20 m³ of firewood

Woodcutter: cost of 10 BAM/m³ → 200 BAM- app. 100 Euros

Transportation: (app. 34 BAM = app. 7 BAM / km) → 230 BAM - app. 115 Euros

Fee to Cantonal Administration for Forestry : 10% of market price of the market value of stumpage- price on the stump of total volume → 100 KM- app. 50 Euros

According to the textbox above, the total costs for exploitation of the 20 m³ of firewood amounts to 500 BAM (250 Euros), and the total value of this firewood amounts to 1,000 BAM (500 Euros). Consequently, this implies that the costs amount to 50 % of the total value of firewood exploited. Equally, some PFOs also report other costs like costs related to the transport of foresters coming to the field to mark the trees or for inspection. Other costs (e.g. transportation costs for foresters) are defined by the contract among the Cantonal Administration for Forestry and PFOs (separate contract for each project/cutting).

According to the survey, major challenges of PFOs are the obligation to request a cutting permit (51%), obligation to pay a fee for every tree cut (41%), obligation to obtain instructions and approvals by forest organs prior to cutting (37%) and mandatory wood transport documentation (21%). Obligatory forest management plans are problem for only 3% of PFOs.

21% of PFOs stated that forest legislation limits the benefits that they have from their forest property, while 25.4% stated that forest legislation does not limit their benefits and 25% stated that forest legislation limits their benefits to a smaller or medium extent. 25% of PFOs did not answer this question.

Textbox 9: Management of private forests in Denmark

In Denmark there doesn't exist any system of logging and transport licenses. Any private forest owner is responsible towards the forest legislation. As long as the forest management practice is in compliance with forest act, the forest owner does under most circumstances not need to apply for permission to carry out any activities.

Only on rare occasions prior permission for logging may be required by the relevant authority. This may be maintenance operations in protected areas. As for logging activities in Natura 2000 areas, prior permission for logging is only required in case of clear-felling / conversion of broadleaves.

Compliance with relevant legislation is monitored by the relevant authority on a spot-checking basis.

The system is built on trust and personal responsibility. Legal actions against forest owners violating the forest legislation very seldom takes place.

6.3 Planning and monitoring systems

Planning

PFOs manage their forests in accordance to regulations and provisions specified in mandatory forest management plans. Forest management plans for private owned forests are prepared by the Cantonal Administration for Forestry. There is one common forest management plan which is prepared for all private forests within one municipality. The afforestation, forest protection and other silvicultural activities as specified in the forest management plans should be performed by the PFOs.

Private Forest Management Plans are developed by expert-consultant private companies. Companies are awarded with the projects during the bidding process, organized by Cantonal Administration for Forestry (document user). Documents are adopted by the Ministry of the Economy of CS (document bearer). Documents are different from municipality to municipality, wherein methodology is mostly completely different and hardly comparable on a higher level. Documents are created and adopted more or less without any participation of the PFOs and are used as a baseline for Cantonal Administration for Forestry during the licensing procedure for forest logging. This means that the document is commonly used as an administrative benefit, rather than document that serves and includes PFOs.

Review of the methodology of collection of taxation elements of private forests and development of the forest management plans for private forests

The Law on Forest stipulates that "forests are managed in accordance with the forest management plan, the provisional annual management plan, the annual management plan and the project for the execution of works in forestry (Execution Project)", and that "the provisions of the forest management plan are mandatory".

It is also envisaged that the forest management plan for private forests is adopted as "one document- forest management plan for all private forests in the area of one municipality".

The forest management plan is being developed for a ten-year management period at the level of the municipality (Article 1. of the Rulebook on the Elements for the Development of Forest Management Plans "OG of FBH", No. 60/02, 29/3, 37/04).

The *Rulebook on the elements for the preparation of forest management plans* foresees that the forest management plans for private forests must contain:

- introduction,

- the state of the forest at the time of editing,
- analysis and evaluation of the current forest management and
- forest management plans for the next operating period.

The same content is foreseen for the development of the forest management plan both for private and state forests, but given the different organization and structure of the spatial distribution, it is impossible to develop management plans for private forests in the same way as for state forests. The inputs (taxation recording) are different, so the determination of annual available cut as well as other plans for management must be different. A special problem for the development of management plans is their realization.

Pursuant to the provisions of Article 3. of the Rulebook on the elements for the preparation of forest management plans, all forests and forest lands are classified by the units of arrangement and classification units.

Arrangement units for forests and forest lands in private ownership are: the Canton area, the area of the municipality, the cadastral municipalities and the representative units (departments).

Classification units are: Forest categories (narrower and wider).

In order to get closer development of management plans for private forests to the forest management plan for state forests, classification units should be formed and viewed as:

1. Area of the municipality = FMA- forest management area,
2. Area of the cadastral municipality = Economic Unit
3. Department = Management class for private forests
4. Section = The type of forest within the forest class (A set of cadastral parcels corresponding to the same type of forest).

In order to provide all the necessary elements for the preparation of a forest management plans in accordance with the Rules on the development of forest management plans, the "Methodology of taxation elements recording in the field " was developed by the Faculty of Forestry in Sarajevo.

The methodology provides basic instructions on the method of measuring and marking of the representative units and recording of taxation data on them, criteria for determining the cultivating-technical classes and technical classes, the contents of the manual for recording taxation data and other contents that are reported in taxation recordings.

Before recording of taxation data and the collection of other information relevant to the forest management plans, determination of the ownership status based on the submitted lists of cadastral parcels by the owners was preceded.

Recording of taxation elements is carried out by categories of forests:

- high forests with natural regeneration
- degraded high forests
- forest plantations
- coppice forests
- bare and unproductive surfaces.

The methodology was developed for measuring taxation elements for state forests and as such it was not adapted to recording the same elements in private forests. The need for a different approach for recording, stems from the following:

- The area of the state forests is bound in a continuous complex of stands with large surfaces of different taxation elements in relation to private forests, e.g. Volume increase is always lower

in state forests in relation to the private forests, which is a necessary element for determining the rate and intensity of harvesting.

- The subjective approach of taking a sample in recording taxation elements, e.g. for national forests a network of sample circles of 100x100 is prepared (1 sample per 1 ha for high forests and 1 sample per 2-3 ha for coppice forests) and for private forests samples are taken by the same principle (1 sample per 1 ha) but it is very difficult to take a sample of taxation elements that reflects the real structure of the stands and often the parcels of private forests are less than 1 ha.

The results of processing all the field data collected for all forests and forest lands are shown for each cadastral municipality and for the municipality as a whole, as follows:

- by categories of forest (wider and narrower): wood stock, annual volume increase, quality of wood stock, soil quality, mixture ratio and assembly.
- by class of forests: wood stock, annual and volume increment, soil quality and mixture ratio.

Surface measurements were made by cadastral survey and were obtained from the contracting authority and are in the "list of cadastral parcels by owners".

Determination of soil quality index was done through the height of the trees for the main tree species, and the height curves were calculated mathematically through functions (Works of the Faculty of Forestry in Sarajevo No. 1/99).

For coniferous species, for which no soil quality ratings were made, soil quality of similar species of trees were used (spruce, fir and white pine, and for broad-leaved tree species: beech, sessile oak).

All data on wood stock, volume increment and analysis of the current management are shown as tree logs.

Textbox 10: Forest planning/monitoring in Denmark

Although, in particularly larger forest properties for practical reasons operates in accordance to prior developed management plans, there exist no formal requirements in this regard. A private forest owner solely decides how to plan – if at all – his or her forest operations. As long as it is in compliance with relevant legislation.

Small-scale forest owners often develop simple maps divided into compartments by using e.g. Google-maps and other free GIS tools. The maps may be complemented by inventory based on tabular data and simple field inventory.

Only formal requirement, which counts for all forest owners irrespective of the size of the forest, is to implement and apply a simple due diligence system in order to comply with the European Timber Regulation.

Compliance with relevant legislation is monitored by the relevant authority on a spot-checking basis. The State forest is the concerned authority for monitoring / enforcing the forest act as well as EUTR.

Monitoring and forest guard service

Monitoring system of the state of private forest as well as indicators on forestry in private forest sector are not established, neither at the federal nor at the cantonal level.

According to the Article 54 of the Law on Forests the cantonal offices (through the organizational structure of the forest guard service) are responsible to protect any activities related to illegal logging and to identify potential perpetrators. According to the Article 72 of the F BiH law, the physical person who commits illegal logging and all relevant activities is subject to a fine of 250 to 1,500 Euros. The fine for similar activities for commercial subjects is significantly higher, between 2,500 Euros and 12,500 Euros, according to Article 69 of the same law. Illegal activities would nationally be defined as illegal possession of forest land, illegal harvesting, illegal transport and storage of forest

products and NTFPs and their transport from the forest (without prescribed procedure and permits) and related processing, as well as illegal building and construction.

In practice, according to the Cantonal Administration for Forestry, 1 forester covers a territory of 2,216 ha of forest (both state and privately owned), which is not sufficient to prevent illegal activities in the private forests.

6.4 Advisory services and lobbying

The responsibility for forests at the cantonal level goes to the Cantonal Administration for Forestry. The main role of the Administration is to control activities of the cantonal forest management enterprise as well as to provide advice and support to PFOs.

According to the Cantonal Administration for Forestry, PFOs do not show a significant interest in their activities e.g. in the period of the last 10 years only 190 PFOs applied for the a seedlings grant (financed by the Cantonal Budget). The budget is not sufficient for any other support to the PFOs.

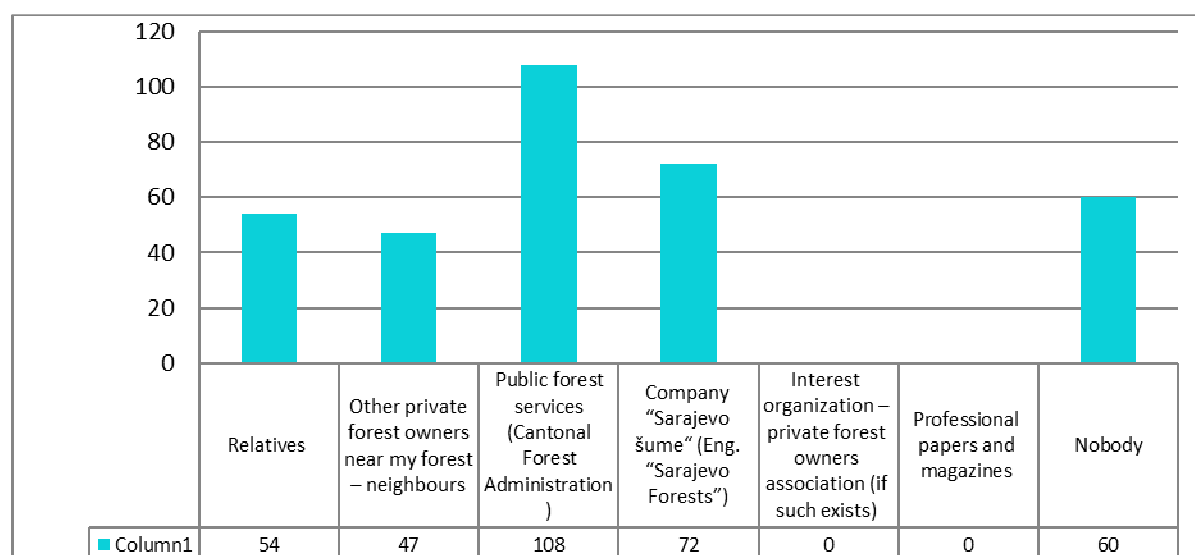


Figure 18: Frequency distribution of answers on question: "When searching for additional information regarding management of your forest, where do you gain information?"

According to the survey, every third PFO searches for additional information from the Cantonal Administration for Forestry (31%). App. 18% of PFOs do not seek additional information. PC Sarajevo-šume has an important role in providing information for 21% of PFOs. 30% of PFOs consult with their relatives or other PFOs/neighbours.

PFOs interests can be represented by the Cantonal Administration for Forestry, the company "Sarajevo-šume", or through interest organizations - PFOA (if such exist). According to answers from PFOs to the question "Please rate how PFOs interests are represented in the CS ?", 33% of PFOs stated that their interests are represented badly or very bad, 29% said good and very good, and 29% were neutral.

PFOs can receive services, such as consultations in forest cultivation and cutting, and trading wood, from the Cantonal Administration for Forestry, PC "Sarajevo-šume" or through interest organizations – PFOA (if such exist). According to the Survey, the majority of PFOs (61%) stated that for them the most important is the Cantonal Administration for Forestry, then PC "Sarajevo-šume" (23%) and PFOA (11.%). Answers that are related to PFOA are in theory, since in reality none of PFOs sampled is the member of PFOA. Private (freelance) consultants are important for only 1% of PFOs.

Regarding lobbying efforts towards various political institutions, in the theory, it can be done by the Cantonal Administration for Forestry, PC “Sarajevo-šume”, or interest organizations – PFOA (if such exist). The majority of PFOs (62%) stated that for them, the Cantonal Administration for Forestry has the most important role for lobbying, followed by PC “Sarajevo-šume” (18.6%) and PFOA (15%).

Textbox 11: Advisory services and lobbying in Denmark

Although, only constituting app 7% of DFOAs net income, the provision of quality advisory services is the central mainstay for the organisations continued existence.

DFOA provides advisory services within almost any aspect within management of forest and open landscapes. Thus, DFOA provides advisory services within: Silviculture, Forest conservation, Legislation, Planning, Production of Christmas trees and greenery for decoration, Contracting operations, Logging and forwarding, Road constructions, Afforestation, Forest hydrology, Hunting and game conservation, Landscape restoration Etc.

Being an operational entity, DFOA mainly focus its lobby activities on representing individual PFOs in connection to applications, mitigation in legal conflicts etc.

Influencing policy and forest sector framework is taken care of by the Danish Forest Association (DFA) which is the trade association that represents forestry in Denmark.

The aim of the Danish Forest Association is to promote the commercial and professional interests of Danish forestry sector and to promote the conservation of nature values in the Danish forests.

DFA cooperates with politicians, authorities, other organizations, foundations, researchers, media and many others.

The association's daily work is financed by membership subscription, project funding and charges for consultancy work provided by the staff. DFOA is one of the biggest members of DFA. Opposite DFOA, DFA does not administer forests itself.

6.5 Marketing and value adding

There is no available information on marketing and value adding of wood which comes from private forests. In general, the main wood products produced in private forests of CS are firewood and technical wood. When it comes to technical wood, PFOs are in general selling raw material - round wood to local sawmills for further processing. In this regard, the price that PFOs achieved is low and there is no value adding at all.

Survey on the Wood Processing Industry in the Sarajevo Canton (SC), as a part of the timber (raw materials) market, was conducted for the purpose of this study, after identification of the lack of these data in secondary literature.

The research was conducted in order to assess and understand the following:

- Rate of equipment, capacities, existing technologies, levels of current production and planned (future) production of the wood processing industry in SC,
- Level of interest of representatives of the wood processing industry for inclusion in the Project as well as their interest for cooperation with the future association of smallholder forest owners,
- Need for procurement of wood from private forests by representatives of the wood processing industry, and
- Conditions under which these industries would procure wood from private forests.

Mix of methods were used for the research purposes, as follows:

- Consultations with relevant institutions that are supposed to have a databases of wood processing industries registered in SC⁷⁰, representatives of local communities and other stakeholders, with use of snowball method for the purposes of identification of business entities from the wood processing industry in SC,
- Desk research method - secondary literature research,
- Field method/field visits of local communities and municipalities of SC,
- Survey on representatives of the wood-processing industry.

The target group of the research were business entities whose primary production field were the processing of logs, i.e. primary wood processing (sawing and woodworking), as well as companies in the field of furniture production that have the need for solid wood in their production.

The identification of companies from the wood processing industry and the survey on the relevant companies were carried out in the period from 1st to 26th of December, 2017. The survey questionnaire has contained two sets of questions: (i) set of question related to research on market and (ii) set of questions for establishment of the pilot database of wood-processing industry representatives, in order to adequately inform them and to involve them in further activities of the project, especially in activities of the future association and value adding to the wood (raw material) from private forests in SC.

The project identified a total of 52 business entities in the field of wood processing industry in SC. Out of 33 economic entities in the SC, of interest for this analysis, 24⁷¹ (72.73%) were contacted and visited and 11 of them (45.83%) responded to the survey questionnaire and expressed their interest to be involved in the work of the association after its establishment.

⁷⁰ Chamber of Economy of Federation of Bosnia and Herzegovina

⁷¹ 16 business entities or 66.67% of those engaged in primary wood processing and 8 business entities or 33.33% of those who have the need for great amount of wood in production

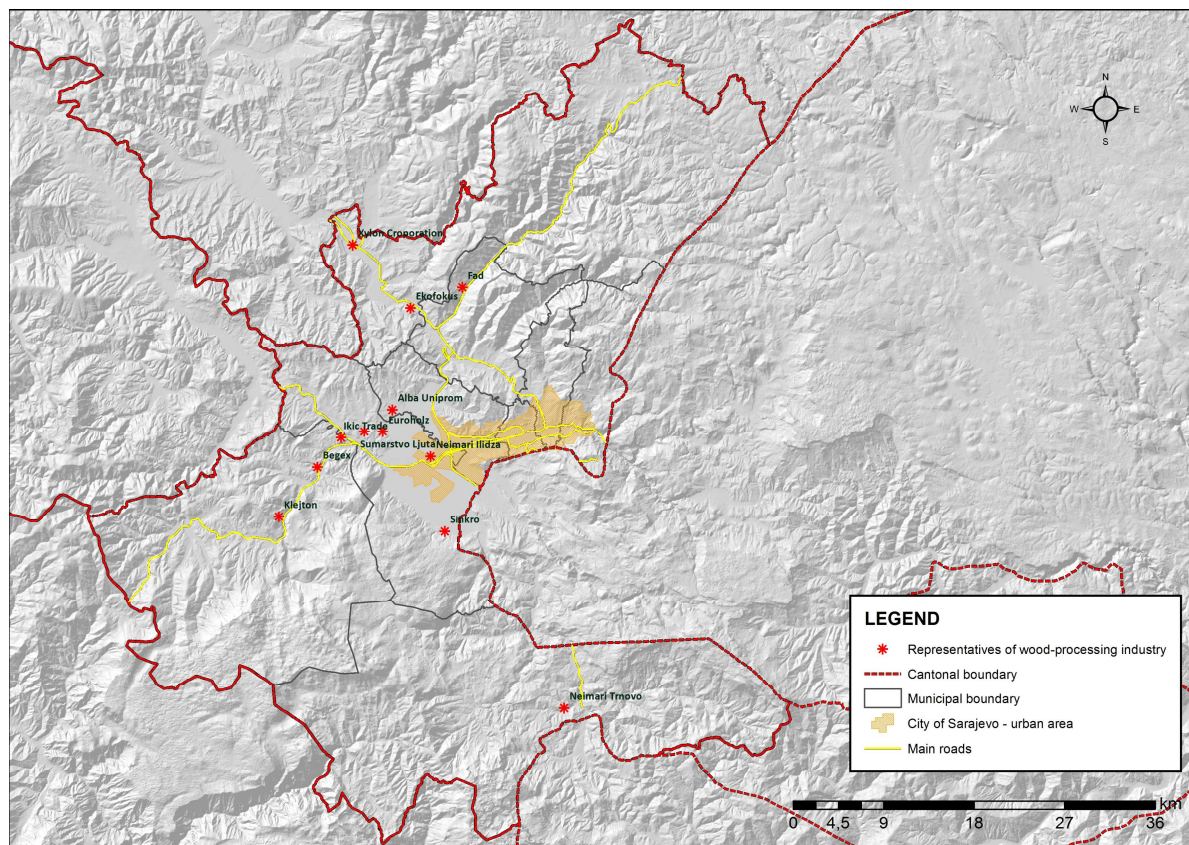


Figure 19: Locations of the companies surveyed⁷²

The total production levels (wood processing) realised in the past 3 years for surveyed companies (N = 11) were 52,815 m³ in 2014, 56,550 m³ in 2015 and 62,800 m³ in 2016. The average level of production (wood processing) realized in the last 3 years was 57.391 m³.

Levels and structure of realized production, according to the basic types of goods and services, realized in the last 3 years by surveyed representatives of wood-processing industry in SC are shown in the following table and graph.

Table 17: Production levels according to the basic types of goods and services realized in period 2014-2016

Products and services	Achieved level of production (m ³)		
	2014	2015	2016
Manufacture of furniture	2,500	3,125	3,750
Manufacture of briquettes	4,000	4,000	4,000
Manufacture of beech timbering	6,000	6,000	6,000
Production of firewood	20,000	22,000	25,000
Sawing and woodworking services	13,750	13,750	13,750
Production of building materials (timbering)	280	390	580
Manufacture of floor and parquet	5,285	6,285	8,528
Production of laminated elements for prefabricated houses	1,000	1,000	1,200
Total	52,815	56,550	62,808

⁷² Some companies have more than one premises/offices.

The highest level of production was achieved in the segment of the production of firewood (on average 22,300 m³ per year) in the segment of sawing and woodworking (on average 13,750 m³ per year) as well as in production of floor and parquet (on average 6,700 m³ per year).

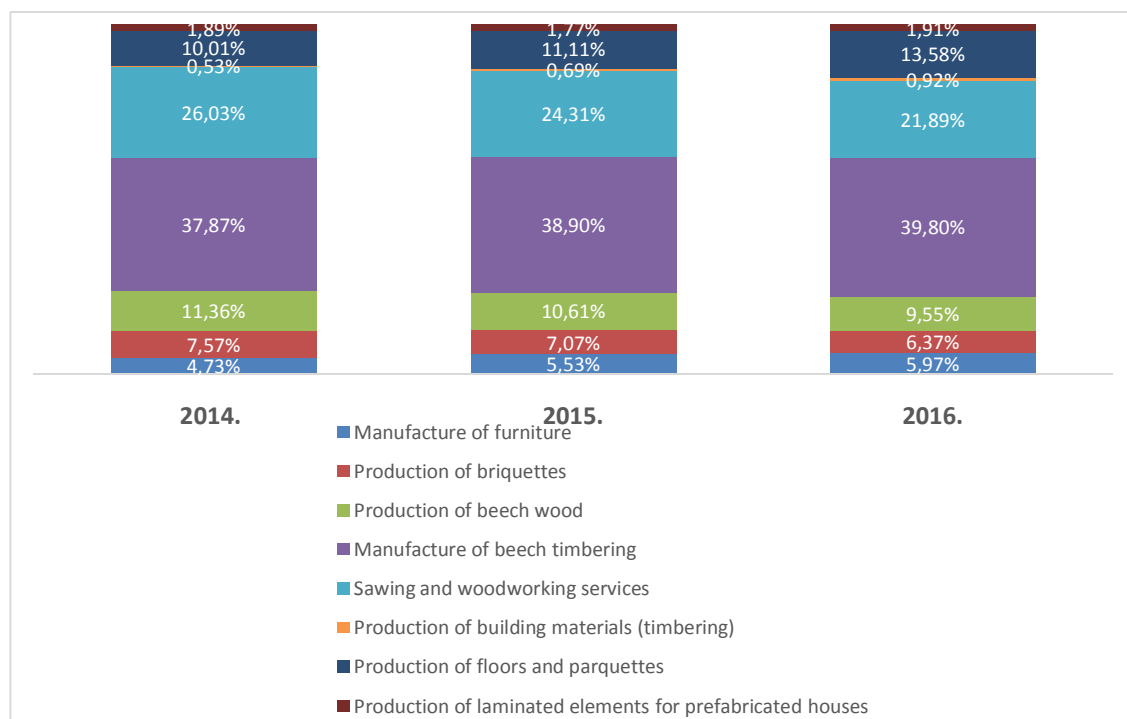


Figure 20: Structure of realized production realized in period 2014- 2016

A continuous increase in production is noticeable for the period 2014-2016 (in 2016 compared to 2015 by 11.69% and compared to 2014 by 18.90%). The largest increase in 2016 compared to 2014 was realized in the production of: floor and parquet by 3.57%, firewood by 1.93% and furniture by 1.24 %. On the other hand, the biggest reduction in 2016 compared to 2014 happened in the segment of sawing and woodworking services (including wood drying) by 4.14%, in the production of beech timbering by 1.81% and production of briquettes by 1.20%.

Daily production capacities of companies involved in primary wood processing are determined by the capacities of brenta (saw for logs) and wood splitters. Capacities of brenta range in the interval of 10-60 m³, and for wood splinters it amounts to 10 m³. Companies engaged in primary wood processing usually have one brenta (saw for logs) and several different woodworking machines, whose capacity is determined by the technical specifications of each machine, while the companies who produce firewood have in average 5 wood splitters. Capacities of wood dryers and steam wood machines range from 20 m³ to 100 m³. The drying period lasts from 3 to 42 days, depending on thickness and type of wood as well as on end-uses.

The most common ways of purchasing raw materials by surveyed companies is the direct purchase of logs from forestry companies (42%), the purchase of logs from individual (private) forest owners (26%) and the purchase of other processors/companies (31%). Other ways of supplying of raw materials, with very small share of 1%, are refer to imports of raw materials from other countries.

In the structure of the tree types of interest of surveyed companies, soft and hardwoods have a share of about 64%, while on the other hand the conifers have a share of about 36%. The problem of lack and inability to procure hardwood broadleaves, especially oak, has been identified.

The most common problems wood-processing companies face in the SC are:

- Inability to purchase quality raw materials 33%
- Lack of quality workforce 26%
- Inability to purchase raw materials in general 22%
- Unfair competition 15%
- Administrative problems 4%.

Representatives of surveyed companies highlighted other problems (unrelated to the questionnaire) related to purchase of wood from private forests, as follows:

1. Inability of private forest owners to issue fiscal invoices; Private forest owners insist that payments are done in cash and not by bank giro transfer; Private forest owners often require a purchase without a purchase contract;
2. Non-possession of property documentation, i.e. documentation on the origin of raw materials by private forest owners;
3. Problems of accurate forestry classes ratings; Quality and quantity of forestry types of private forests;
4. High costs of timbering and transportation on the hard forest road;
5. Time consuming procedures of marking trees for cut in private forests and other permits from forestry administration;
6. Limited logging by forestry administration and low annual allowable cut,
7. The lack and inability to procure hardwood broadleaf especially purchase of oak,
8. Private forest certification and not possession of FSC, PEFC, TÜV certificates (important for exporting companies);
9. Introducing the Decisions of both Governments (FBiH and RS) on temporary ban on traffic/selling of the logs (decisions apply only to technical wood not for firewood).

It is important to emphasize that from previous stated reasons Company Drvosječa d.o.o. Sarajevo, as biggest supplier of firewood (yearly production of app. 80.000 m³, 90 % products exporting) has not expressed interest to cooperate with future Association.

Textbox 12: Marketing and value adding in Denmark

DFOA plays a central role in marketing and value adding for the PFOs.

By pooling supplies from app 5000 forest owners, DFOA becomes a very attractive trade partner for the industry, ultimately benefitting the individual PFOs. E.g.:

-DFOA can provide stable supplies of homogenous quality and thereby achieving relatively high prices.

-DFOA can place right products on the right markets.

DFOA also plays a central role in value adding. The value adding that can be divided into long short-term and long-term horizon efforts roughly consist of:

Long-term horizon:

Silvicultural interventions such as: (i) Correct site and species selection, (ii) Provision of improved planting material / provenances, (iii) Timely application of appropriate afforestation techniques, (iv) Timely, correct and well dosed stand improvement interventions, e.g. selective thinning, pruning etc

Short-term horizon:

- The use of modern and efficient logging and forwarding technology. E.g. optimisation of assortment distribution during logging operations
- The use of modern and efficient logging and forwarding techniques. E.g. forwarding on brash mats
- Optimised log measurements processes by using digital recording of data
- Improved logistics.

6.6 Willingness of PFOs to become a member of a PFOA

There is no PFOA in CS, but there are three PFOAs in BiH (2 in Banja Luka and 1 in Bihać). None of the PFOs in the sample is a member of a PFOA.

45% of PFOs interviewed stated that they miss an interest organization – a PFOA that would support them in managing their forest e.g. in cultivating and cutting forests, or trading wood. 22% had the opposite opinion. Every third PFO was neutral.

40% of PFOs stated that they miss an interest organization – a PFOA that would represent their interests by lobbying with political parties and officials at all levels (Municipality, Ministry, Government) for the purpose of improving the overall social and economic state of PFOs. 25% of PFOs had the opposite opinion. Every third PFO (34%) was neutral.

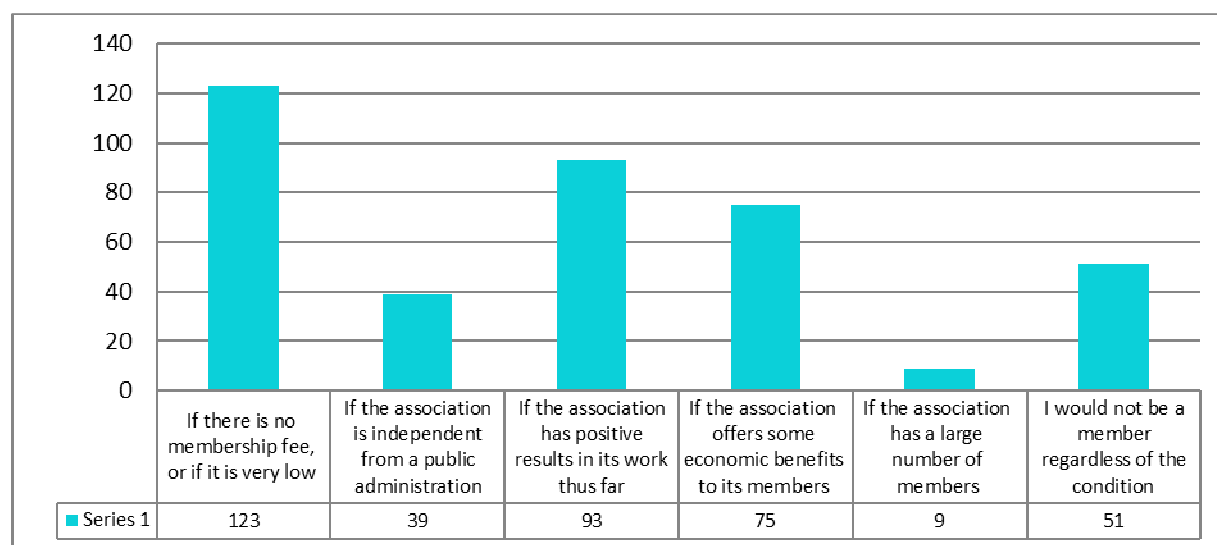


Figure 21: Frequency distribution of answers on question: "Under what conditions would you be willing to freely become a member of a PFOA ?"

For the majority of interviewed PFOs, the main condition to join a new PFOA is that there is no membership fee (37%) followed by these conditions: positive results in its work (28%) and if association offers some economic benefits to its members (22%). 15% of PFOs stated that they would not become members of such an association regardless of the conditions.

22% of PFOs are willing to get personally involved in establishing a PFOA in the area where they live; 42.5 % (almost double) are not willing to get personally involved.

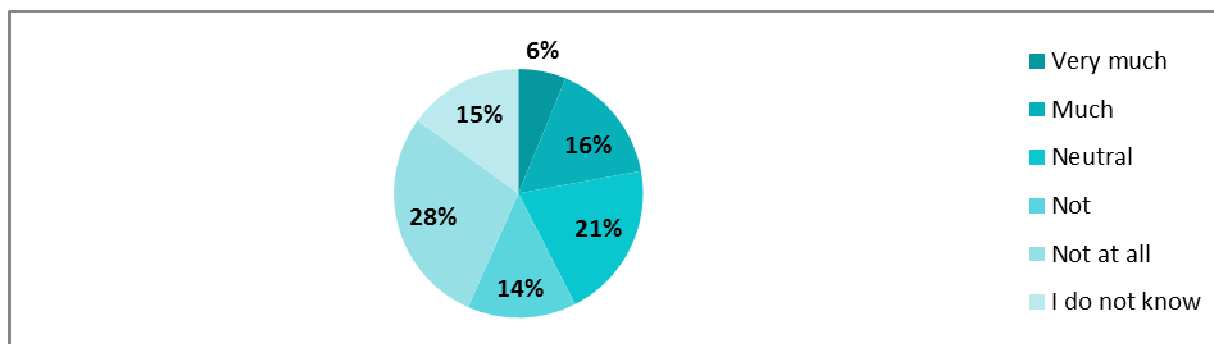


Figure 22: Willingness of PFOs to get personally involved in establishing a PFOA in the area where they live

Half of the respondents (50.5%) support the idea that all PFOs automatically (under the Law) become members of an interest organization – a PFOA. 27% do not support this idea.

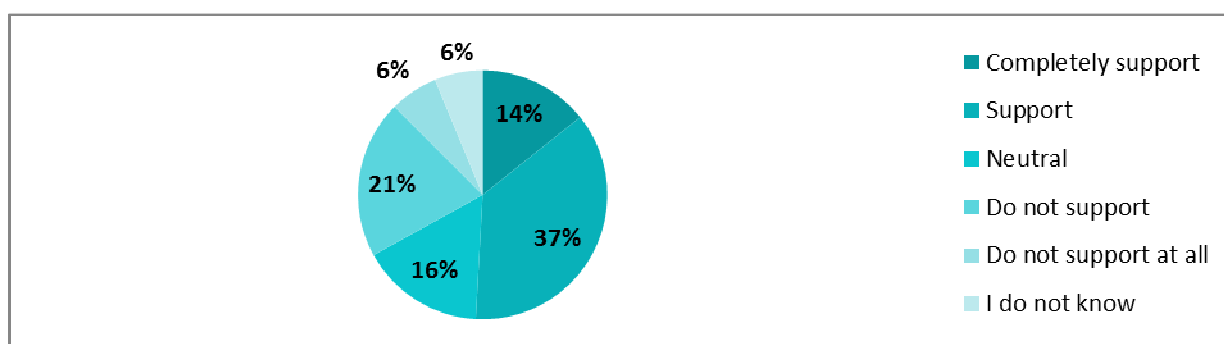


Figure 23: Percentage distribution of answers on question: "Do you support the idea that all PFOs automatically (under the Law) become members of an interest organization – PFOA?"

61% of PFOs in the sample are not willing to pay for a membership fee in a PFOA, while 37% are ready to pay. 1.8% did not answer this question. The minimum amount that PFOs in the sample are willing to pay is 2 BAM (1.02 Euros) and maximum is 100 BAM (51.13 Euros). Average amount that PFOs in the sample are willing to pay is 35 BAM (17.90 Euros).

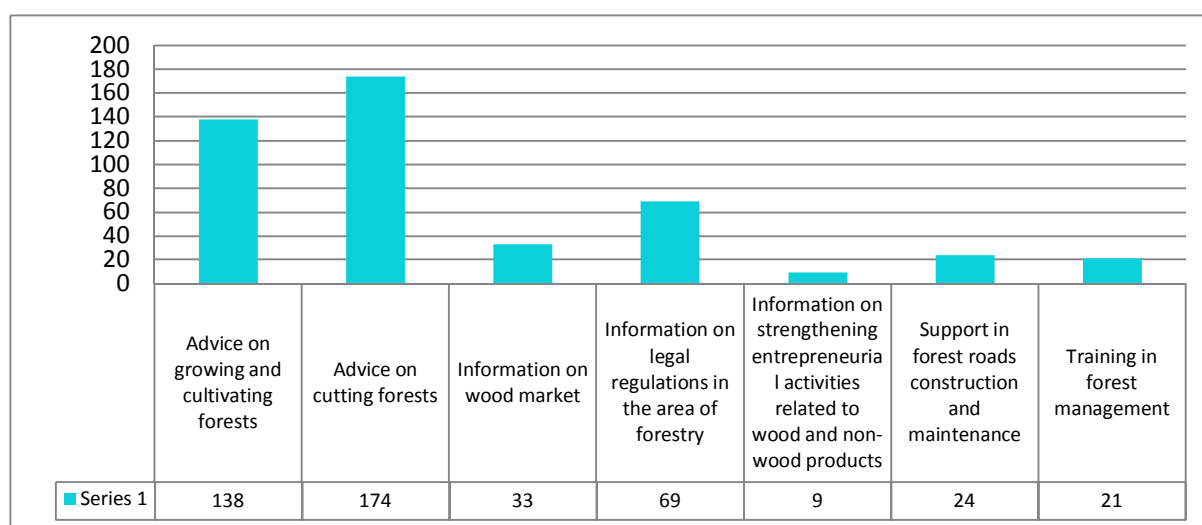


Figure 24: Frequency distribution of answers on question: "What services, aimed at improving your forest management, do you expect from a PFOA?"

According to the survey conducted, PFOs of CS most expect from PFOA services like: advice on cutting forests (48%), advice on growing and cultivating forests (38%) and information on legal regulations in the area of forestry (19%). Taking this information into calculation, PFOs of CS are more interested in advisory services, than other types of assistance and services .

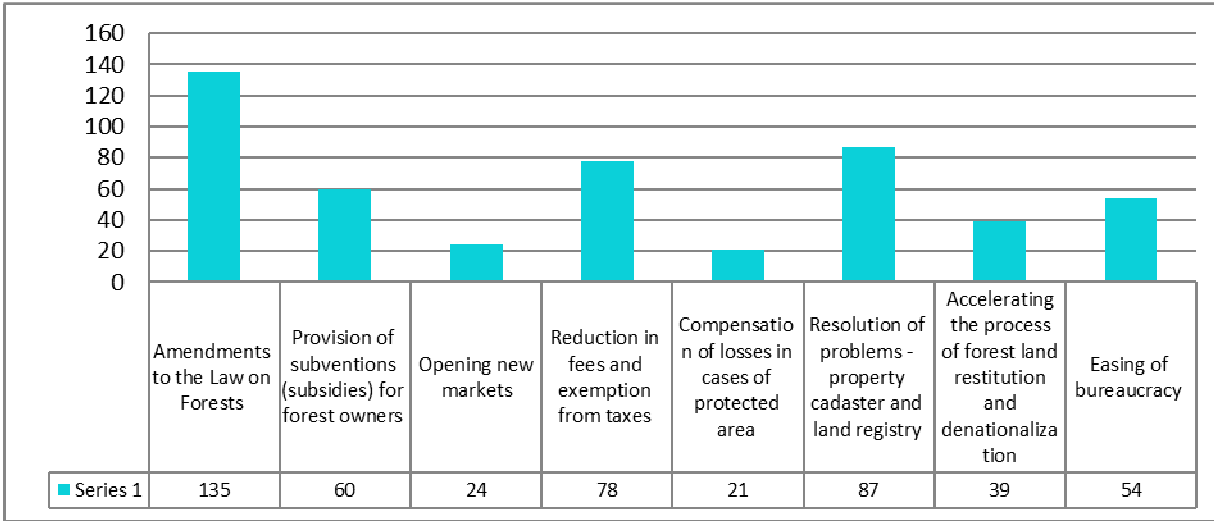


Figure 25: Frequency distribution of answers on question: " What activities in terms of representing your interests do you expect from a PFOA "

However, taking into account question: " What activities in terms of representing your interests do you expect from a PFOA", PFOs of CS most expect from PFOA activities as follows: (i) amendments to the Law(s) on Forests, resolution of mismatch between cadastre and land registry (book), reduction in fees and exemption from taxes (related to forest legislation), provision of subventions for PFOs and easing of bureaucracy (related to forest legislation).

6.7 Willingness of PFOs to cooperate

In general, every third PFO is willing to cooperate with others PFOs.

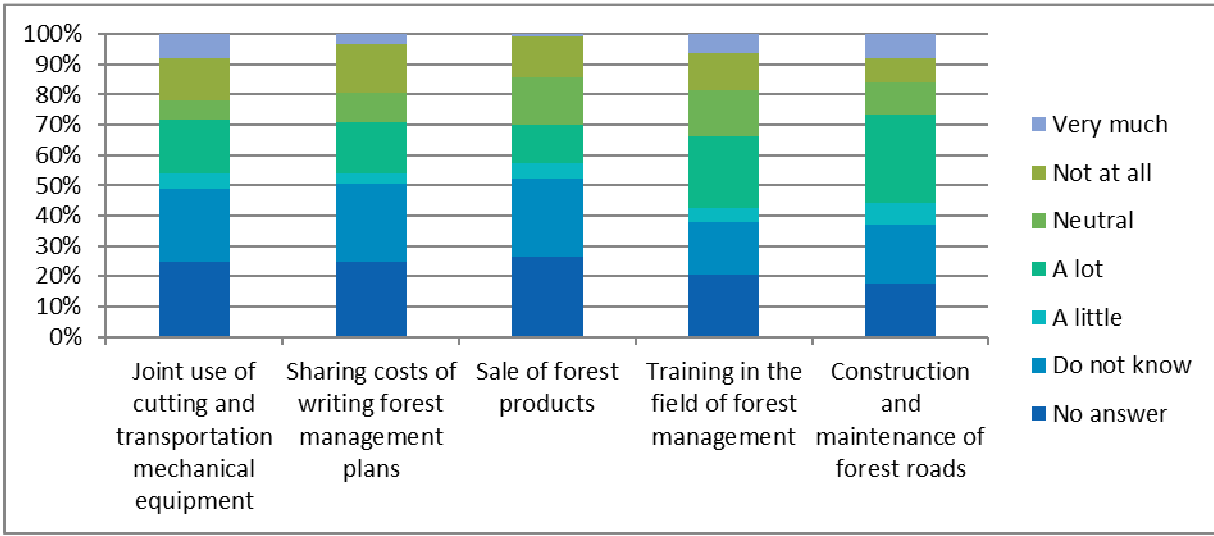


Figure 26: Comparative overview of willingness of PFOs to cooperate with different activities

PFOs of CS are most willing to cooperate among themselves on following activities: (i) construction and maintenance of forest roads (37.5%), training in the field of forest management (30%) and joint use of cutting and transportation mechanical equipment (26%).

7. SWOT analysis

The SWOT analysis of the private forest sector in CS has been prepared according to the literature review and information presented in this scoping study, consultative meetings with the Cantonal Administration for Forestry, PFOA “Naša šuma” Banja Luka, NGO “Association of PFOs and Nature Lovers” Binježev, Sarajevo-šume d.o.o. Sarajevo, Chamber of Commerce of CS and representatives of the Faculty of Forestry of the University of Sarajevo, as well as according to the information gained through consultations/focus groups organized with 130 PFOs in 16 local communities.

The SWOT analysis from the aspect of exploitation of private forests and sustainable management of private forests is presented in Table 18.

Table 18: SWOT analysis of private forest sector

S	W
<ul style="list-style-type: none"> Many PFOs (app. 17,000) Many hectares - many m³ of standing volume (12.252,08 ha (14.76%)) Many PFOs with knowledge of forestry State of private forests is more favourable than public ones (few mining areas, shares of other categories (unproductive bare land, productive bare land, forest plantation and mined areas)) Percentage share of high forests is equal in private and public forests. Wood stock of deciduous in private high forests is higher than in state high forests (for 4%), annual volume increase is higher per ha in private deciduous forests (both high and coppice), although is lower with conifers for 8%, compared to public forests Coppice forests (5,219.33 ha, 43%) 	<ul style="list-style-type: none"> Bureaucracy - due to distrust No legal knowledge- due to complexity Small average size of holdings + fragmentation (app. 1.752 land plot per owner of 0.411 ha) Poor statistics and information, non-updating of data in the cadastre and the problem with mismatch between old and new cadastral survey Poor infrastructure Price of public service- that are mandatory Poor access to the markets and market information Only little value adding to forest products No incentives to be innovative No certified private forests exist in BiH and in regards to certification, forest owners lack capacity and knowledge. Not sufficient administrative capacity to enforce actual forest legislation Illegal activities in general
O	T
<ul style="list-style-type: none"> New legal framework including Strategically forest programme Big economic potential if proper organized (value adding) NFTPs Plantation- fast growing species Establishing of PFOAs Donor interest in the sector Room for the improvement concerning silviculture and forest management Skip FMPs or simplification of them Ongoing activities regarding the question of finding the model to provide access to Certification for PFOs 	<ul style="list-style-type: none"> Mismatched legislation - the resistance of the administration towards the adoption of higher-order legislation in the private forest sector Lack of willingness to get involved by PFOs: Only 22 % of PFOs are willing to get personally involved in establishing a PFOA in the area where you live; 42.5 % (almost double) are not willing to get personally involved Establishment of the protected areas (limited use or inability to approach to plots)

8. Potentials of the Smallholder Forest Sector in CS

8.1 Sustainable forest management and importance of forest ecosystem services

Sustainable forest management

According to the old Law on Forests of FBiH, sustainable forest management is not specified. According to the draft of the new Law on Forests of FBiH, sustainable forest management implies management and utilization of forests and forest land in a way to conserve their biodiversity, productivity, regeneration capacity, vitality and their potential i.e. to enable ecological, economic and social function at the local, national and global level, without endangering normal functioning of other forest dependent ecosystems. Sustainable forest management is based on the principles of sustainability and multi-functionality as well as economic principles.

According to the draft of the new Law on Forests of FBiH, forest management includes cultivation, protection and utilization of forest and forest land in accordance to criteria for sustainable forest management and regulations of Forest Management Plan. Criteria for the evaluation of sustainable forest management are: a) maintenance and specific improvement of forest ecosystems and their contribution to global carbon cycle, b) maintenance of health and vitality of forest ecosystems, c) maintenance and encouragement of productive forest functions, d) maintenance, conservation and specific improvement of biodiversity in forest ecosystem, e) maintenance and specific improvement of protective functions in forest management (especially soil and water) and f) maintenance of other social-economical functions and conditions.

Forests, in general provide multiplicity of benefits supporting human wellbeing. These benefits are known as ecosystem services. The Millennium Ecosystem Assessment (MEA) defines ecosystem services broadly as "the benefits people obtain from ecosystems". It means that it is not only wood, berries and mushrooms that are produced in forests, but also other services such as water protection, carbon sequestration or cultural and human wellbeing services. The maintenance of the ecosystem services provided by forests is only possible by implementing a sustainable forest management approach. The extent and conditions of forest resources largely define the ecological limits for management activities of forest companies. Ensuring the multifunctional role of forests to supply provisioning services, such as timber, and at the same time provide regulating and cultural services is one of the aims of sustainable forest management. Nevertheless, most of the income in forestry is from timber production, whereas other non-marketed ecosystem services would require incentives for its provision, which would be oriented to satisfy increasing societal demands. PFOs manage their forests in accordance to regulations and provisions specified in mandatory forest management plans prepared by the Cantonal Administration for Forestry (or consulting firms designated by the Cantonal Administration for Forestry). The afforestation, forest protection and other silvicultural activities as specified in the forest management plans should be performed by the PFOs (Gluck et al., 2011).

Forest ecosystem services

Forest ecosystems in BiH are extremely rich in terms of biodiversity. Estimated number of plant species, subspecies and varieties is 3572, with 500 of them endemic. Only 2% of the territory of BiH is under formal protection, mainly forest ecosystems. Global trends for nature protection and strengthening of the non-governmental sector have spurred initiatives to establish new protected areas. Due to this, large areas of productive forests have been protected, resulting in a transfer of management responsibilities from foresters. In the process, a long tradition of close-to-nature forest management can often be neglected. The large majority of the forest ecosystems in BiH are still characterized by the natural structure. From the perspective of timber production which makes an essential service to the population of BiH, forest ecosystems in BiH are roughly differentiated into highly productive forests and low productive forests. Forests of the hilly and mountain belts are

dominantly the highly productive ones. Mountainous areas are mostly characterized by mixed deciduous-coniferous communities, on deep brown calcareous and siliceous soils. As concerning the protective functions of forests as special ecosystem services, the following in the territory of BiH have an essential role: Alpine forests (top borders of forests); and Riparian forests (forests along river courses and wetland habitats). The role of different types of forest ecosystems for the development of other ecosystem services and benefits from forests should not be omitted. Some of the benefits are essential for the population in BiH. These include reducing the risk of flooding, the absorption of CO₂, climate regulation, air purification, regulation of soil erosion, etc.⁷³

One of the main opportunities for forest management practice in BiH, including CS is to introduce innovative forest management approaches in both legislative and policy framework of the forest sector and day-to-day management practice. Traditional way of forest management is based on technical expertise without active participation of relevant stakeholders (forest owners, representatives of other sectors etc.) which is why the opportunity for change is related to its improvement. At first place, it is necessary to improve the effectiveness of forest utilization and to create a change from "timber production" orientation towards "maintaining forest service" orientation. Secondly, BiH as well as CS has huge potential of forest resources and it's feasible to provide various goods and services beside timber. Private forests in CS are valuable source of various goods and services that could be effectively managed by their owners with help of state forest administration.⁷⁴

More than 50% of the BiH population lives in rural areas and relies in one way or another on forest and mountain ecosystems as an important source of subsistence, employment, energy, and recreation.⁷⁵ Social functions of forests (recreation, tourism, education, culture, art etc.) are becoming more important for the urban population in the last few decades. In the CS, forests cover more than 65 percent of the territory and the highest percentage of forests is situated in locations where the local population regularly go on excursions (FAO, 2015). Forest resources are recognized as important preconditions for the development of ecotourism and recreational activities in the Spatial Plan of CS.⁷⁶

The expectations of society from forests, particularly in urban areas, are dramatically changing. In urban dwellers' perception, forests are not only the ecosystem which supplies wood; – nowadays, it is perceived as the most important element of overall environment. Possibilities for improving the quality of forestry business come from the promotion and supply of new forest services (such as forest ecotourism) to potential consumers (FAO, 2015). The concept of urban forests has become more and more pronounced in FBiH with the request by urban populations for forests and greenery for amenities such as scenic beauty and recreation. Still, there is insufficient data related to trees outside forests and their contribution to the production of goods and ecosystem services such as outdoor recreation, water and air quality, flood prevention and carbon sequestration.

Ecosystem services are not defined by the Law on the Nature Protection of FBiH. In proposal of the Law on Forests of FBiH, the multi-beneficial functions of forests are defined, and their valuation is prescribed (but the valuation method is not defined) within the Forest Management Plan. In FBiH, the methodology of forest functions valuation is not defined, and its defining is not specifically required in the by-laws. Besides, the other analyzed sectoral laws (spatial planning, water, land, forest, agriculture, hunting, fishing, tourism, energy) do not define the terms of ecosystem or ecosystem services. Concerning other relevant documents, Draft Strategy and Action Plan for

⁷³ UNEP (2016): Strategy and action plan for protection of biological diversity in Bosnia and Herzegovina (2015 - 2020)

⁷⁴ Avdičević, M., Mutabdzija S., Bećirović, Dž., Marić, B., Deli, S., Čomić, D. (2015). Forest Land Ownership Change in Bosnia and Herzegovina. Cost Action FP1201 FACESMAP Country Report. European Forest Institute Central-East and South-East European Regional Office, Vienna

⁷⁵ World Bank (2013): Bosnia and Herzegovina Partnership Country Program Snapshot. World Bank Country Office BiH. Sarajevo

⁷⁶ Institute for Development Planning (2006): Spatial Plan of CS from 2003 to 2023. CS . Sarajevo

Biodiversity Protection of BiH (2015-2020) defines ecosystem services and contains specific measures regarding valuation of ecosystems and ecosystem services; Draft Forestry Program of FBiH emphasizes the issue of the lack of a methodology in FBiH for complete valuation of forest resources.

In EU countries, PES⁷⁷ scheme is being used as one of the economic instruments for sustainable forest management. Payments for Ecosystem Services (PES) represents one alternative and voluntary way to secure financial sources for multifunctional and protective forest management and sustainable maintenance of ecosystem services. At the same time, PES ensures the provision of marketed ecosystem services and provides a suitable path for diversifying various sources of funding for forestry activities. PES can help to maintain sustainable forest management (SFM) and simultaneously protect forest.⁷⁸

In 2004, almost 11 % of total income of the public forest management company in CS (Sarajevo-šume d.o.o. Sarajevo) came from the Cantonal Government as financial support for promotion of different social forest functions such as management of protected areas and improving forests recreation infrastructure. For the forest sector, this means a shift towards multifunctional forestry with a grade of social responsibility and the management of forest resources based on principles of sustainability while satisfying changing ecological, social and economic demands of society towards forests (FAO, 2015).

Considering the overall economic situation, lack of capacity in the sector of nature protection, small budgetary allocations for nature protection, no existence of a fee that would fill the nature conservation budget, it is hard to talk about implementation of PES in the near future, but it should definitely be considered when it comes to improvement of the existing forest management, including protected areas management.

Recent positive changes in terms of providing environmental and cultural benefits from the forests to local livelihoods are evident from the introduction of the concept of high conservation-value forests (HCVFs), which several forest companies have applied in order to obtain Forest Stewardship Council (FSC) certificates. This practice results in some environmentally or culturally relevant areas of great importance for local population being managed by special management regimes.

8.2 Market access potential and certification

BiH has a long tradition in forestry and wood processing. This sector is export oriented, for several reasons: the abundance of both hardwood and softwood, manufacture facilities with capacities for different wood products, furniture and timber production that exceed domestic demand. Forests in BiH have the potential to provide nearly 7 million m³ of round wood per year on a sustainable basis. One of the main characteristics of wood processing sector in BiH is a large gap between its current performances and real potential. Targeted investments have the potential to bridge this gap as well as to improve the value-added income. The processing level is possible to increase by introducing new technologies (CNC⁷⁹), which will also enable greater added value and profit from finalized products. One of the opportunities that should be considered is reusing the waste material. A large amount of waste material produced by primary wood processing facilities could be used for production of bricks, pallets and laminating of the wood.

⁷⁷ Payments for Ecosystem Services (PES) - involves a series of payments to land or other natural resource managers in return for a guaranteed flow of ecosystem services over-and-above what would otherwise be provided in the absence of payments. PES scheme describes the way how beneficiaries or users of ecosystem services provide payment to the stewards or providers of ecosystem services (Source: <https://www.cbd.int/financial/pes/unitedkingdom-bestpractice.pdf>)

⁷⁸ Viszlai, I., Barredo, I. J., Ayanz, J.S.M. (2016): Payments for ecosystem services. SWOT Analysis and Possibilities for Implementation. JRC Technical Reports

⁷⁹ Computer Numerical Control (CNC) - refers to a computer control that reads the instructions of manufacturing code and start up the manufacturing machine. It is widely used in wood aerospace, machinery, electrical, fabrication, automotive and instrumentation industry.

Considering the objective economical-social conditions in the past, as well as current conditions, business systems of forestry in BiH have not developed a wide portfolio of products and services. However, inevitable changes in societal demands toward forest resources, seek for a different and improved program of products and services, that should be offered to the market by the forest companies. According to available data from the forest companies and their revenues, a revenue from forest wooden products is dominant in total achieved revenue, counting to 80% (in 2006) to 90% (in 2009). Other revenues make revenues based on the usage of cantonal or federal funds, while very low percentage of revenue is achieved through performed services and other forest products. Revenue structure like this, reflects an extremely narrow product-business portfolio of forest companies, which is quite unacceptable considering the high potential of forest resources in terms of products and services.⁸⁰

With implementation of the market oriented business in forestry, an increase of production of non-wood products can be expected. The estimation is that market for these products exist and that demand will stay on satisfactory level. Major threats are competitiveness of better organized producers of non-wood products, which can depress from the market small producers from BiH.⁸¹

When analyzing the influence of global initiatives at forest-related policies, it's possible to conclude that forest certification had had the most important influence in FBiH. Forest certification has gained the status of a solid self-sustainable instrument for increasing the competitiveness of forestry companies. Certification of forests has a huge potential for multifunctional forest management. All certified forests in BiH are owned by the state and are certified by the FSC (Forest Stewardship Council). There are no certified forests in private ownership. There are ongoing activities regarding the question of finding the model to provide access to Certification for PFOs.

A total of 1,519,234.9 ha of state forests are certified by FSC in BiH. At the moment, four state forest companies (3 cantonal and one in RS) have FSC FM/COC certificate. These are as follows: "Unsko-sanske šume", "Hercegbosanske šume", "Šume Republike Srpske" (which cover whole RS) and "Šume Tuzlanskog kantona". Cantonal company of CS - "Sarajevo-šume d.o.o. Sarajevo" lost its FSC certificate as a result of not conducting requested corrective measures, but they hope they will obtain it again by the end of 2017. There are 264,231 wood processing companies in BiH which possess FSC CoC certificate. Forest certification process has been mainly driven by interest of export-oriented wood-processing companies and their needs for better access to global markets.⁸²

The lack of opportunity for PFOs to access the FSC certification is a major competitive disadvantage. In order to overcome this challenge, PFOs need to organize themselves; e.g. in associations to synchronize their different interests, get information on certification processes and prepare the preconditions for certification in terms of standards, rules of procedure and compliance demands. In fact, given the fragmentation of PFOship some forms of group certification might have to be explored.⁸³

8.3 Value chain of forest products including wood and NTFP

Wood products

Forestry and wood processing have the longest tradition when it comes to industry in BiH. Forestry and wood processing industry represent a significant part of BiH economy. Forest industry

⁸⁰ Federal Ministry of Agriculture, Water Management and Forestry (2011). The valuation of forests and forest land cover. Final Study Report. Sarajevo

⁸¹ https://www.unece.org/fileadmin/DAM/timber/workshops/2006/MktStatement_Bosnia&Herzegovina.pdf

⁸² Avdibegović, M., Shannon, M., Bećirović, Dž., Mutabdzija, S., Marić, B., Malovrh, Š. P. (2014). Assessing forest governance in the Federation of Bosnia and Herzegovina. Views of forestry professionals. Forests under pressure. Local responses to global issues. IUFRO World Series no 32.

⁸³ https://europa.ba/wp-content/uploads/2015/05/delegacijaEU_2015020309283833eng.pdf







development is based on the utilization of domestic resources and it's primarily export oriented. 1,241 different companies in FBiH are registered within forest industry. The industry has exporting potential and it is one of few industries which has high foreign trade surplus. Basic characteristics of wood industry in FBiH are as follows:

- raw material is a domestic resource;
- capacities of sawmilling industry are much higher than available resources of raw material;
- unsatisfactory relation between primary and final processing;
- disproportion between demand and offer
- low level of fibre boards and particle boards production


There are significant potentials in production and export of energy wood (wood pellets), engineered wood products and wood based boards but also sawn wood products, veneer and furniture. Total forest stock in BiH is estimated to be around 350 mil. cubic meters (wood thick 7 cm and above measured at thinner end) producing an estimated 10 mil. cubic meters of volume increments annually (wood with thickness 7 cm and above measured at thinner end).⁸⁴


There are numerous sawmilling and furniture production capacities in BiH that overcome domestic market needs. Significant quantities of sawn wood, energy wood and furniture are exported mostly to Serbia, Montenegro, Croatia, Slovenia, Italy, Germany, Great Britain, France, Hungary, Slovakia and also to USA, Australia and Asian countries.


Table 19: Potentials in production and export of different wood products in BiH

Forest product		
Production in 2015		
Wood panels and veneer		58.000 m ³
Round wood		4,040.000 m ³
Sawn wood		1,060.000 m ³
Wooden furniture		5 mil. pieces
Export in 2015		
Wood pallets		1,060.000 m ³
Wooden furniture		117.977.252 EUR

LEGEND:

 very high potential

 high potential

 moderate potential

According to UNECE data⁸⁵, recorded production of round wood assortments in BiH varies slightly, depending on the economics factor. Considering the wood stocks and annual volume increments, one can conclude that possibilities for developing of forest production are high. Production of sawn wood in last five years is on quite constant level. When it comes to energy wood, production and energy wood export in BiH record rapid development. All kinds of energy wood are exported: solid wood for heating, wood charcoal, wood chips, wood sawdust and other residues and particles, wood

⁸⁴ UNECE (2016). Bosnia and Herzegovina Market Statement 2015. 74th Session of the ECE Committee on Forests and the Forest Industry. Geneva

⁸⁵ UNECE (2016). Bosnia and Herzegovina Market Statement 2015. 74th Session of the ECE Committee on Forests and the Forest Industry. Geneva

pellets and other agglomerates. Major expansion is recorded for production and export of wood pellets, which is why this product has a great potential for the future. A great potential lies also in production of fibre boards and particle boards, considering the rising trend of import in BiH. Small or non-existing domestic production of fibre boards, particle boards and Oriented Strand Board on one side and comparably large and rising need of domestic furniture industry on the other side together with available raw material resources open possibilities for development of the fibre and particle boards industry and foreign investments.

General conclusion for BiH wood processing industry as a whole is that there is an over-capacitation with sawmill companies and that forest and wood industry should shift towards higher value-added products (furniture and wood based panels and boards and other engineered wood products).

According to available data and current situation, here are some of the conclusions related to wood industry in FBiH:

- high relative trading surplus with foreign countries
- unsatisfying export structure
- organizing of production in small plants nearby raw material
- relatively high work force engagement
- inexistence of FBiH wood industry brand
- unsatisfying assortment and product quality.

Non-timber forest products

As mentioned earlier, BiH has a great potential in NTFPs, but this sector is quite underdeveloped and disorganized. The system depends heavily on weather conditions, market factors, characteristics of the participants in the chain and business environment.

Collecting the medicinal and aromatic plants is mainly carried out by local middle age population or elderly persons, mostly from rural areas, whose revenues from medicinal herbs sale is mainly their sole source of income. Relying on their long-time experience and intuition as well as with occasional instructions provided by potential buyers, these persons find and pick medicinal and aromatic plants in forests, on mountains and non-cultivate meadows and fields across BiH. It is estimated that annual collecting of plants varies from 1.500 to 9.000 tons, depending on weather conditions.⁸⁶

The sector of medicinal plants, mushrooms and forest fruit is expanding at fast rate. According to the data released by the Foreign Trade Chamber of BiH, 3,406,573 kg of medicinal plants and forest fruit was exported in 2010, the value of which amounted to 26,277,602 KM, which is an increase of almost 68% in comparison to 2009.⁸⁷ More recent data is not available.

Collectors and processors are aware of the economic importance of the NTFPs as well as the environmental and social aspects. According to recent studies, the lowest value gain collectors (two to three times less than the processors), while the share of trade margins in the market prices is very high.

One of the main characteristics of the value chain is extremely low level of knowledge in harvesting and preparation procedures by all participants included. A major threat to an integrated value chain is the fact that processors do not provide educational support for collectors in the area of good collection practices and appropriate methods for sustainable collecting. Hence, the education of the

⁸⁶ GEA – Center for research and studies. 2012. Guide for cultivation of medical and aromatic plants. Banja Luka

⁸⁷ Ministry of Environment and Tourism FBiH. 2014. Fifth national report to the United Nations convention on biological diversity in Bosnia and Herzegovina. Sarajevo

collectors in the area of good collection practices is highly necessary, which could also enable effective networking and partnerships establishment.

Some of the problems that raised between collectors and buyers are: (i) unsatisfactory quality of the product due to poor procedures and rules in collection, (ii) insufficient training and professionalism of collectors, poor organization of purchase and transport of collected NTFPs, and (iii) dissatisfaction with the distribution of the value in the NTFP value chain. There is an evident growing sale trend of all the NTFP types.

Data for CS is not available but according to Foreign Trade Chamber of BiH, there are few companies in CS that are purchasing mushrooms and forest fruit, from PFOs through redemption stations, of which most important one is Klas d.o.o. Sarajevo.

The basis for achieving competitiveness in international markets is improvement of the technical and technological aspects in proceedings with the NTFPs, standardization and certification, development of the new products, and implementation of marketing activities, in order to provide transparent information on market opportunities for all participants in the value chain. The legal regulation of this field in accordance with international conventions and regulations on sustainable use and protection of endangered species, and the establishment of monitoring, would have resulted in the conservation of biodiversity and the sustainable use of the NTFPs. The NTFPs represent a significant part of the forest ecosystems values, which is why they can be a driver of development and motivation for change in the forest resources utilization concept. From the perspective of a broader socio-economic context, it can significantly affect the definition of the forest policy objectives, multifunctional use and determine the strategic direction of the sustainable forestry development.⁸⁸

8.4 Biomass production

Despite the fact that forests and forest land represent one of the most significant natural resource in BiH, there is no strong strategy towards production of fuel and energy from biomass. More fairly to say, BiH is at the beginning of problem solving related to woody biomass utilization and biomass, in general. Still, the most widespread use of wood biomass in BiH is in the form of firewood, although it's possible to produce wood products with better energy efficiency using modern technologies. It is expected that wood biomass production for energy will intensify, considering the constant rise of fossil fuels price and negative effect of fossil fuels on the environment. Based on the current situation, one can say that promoting production of wood chips, briquette and pellets could significantly contribute to development of rural areas as well as increase the number of jobs.⁸⁹

Studies have shown that BiH has a large annual potential of wood for energetic purposes (close to 3 mil. tones of wood resources), that is under-utilized in quite high amount. The possibilities of higher and more efficient utilization of these resources depends heavily on interest and readiness of relevant institutions to educate consumers about the benefits of woody biomass. Besides, institutions should also provide a necessary financial support in order to strengthen initiatives for woody biomass utilization.⁹⁰

According to USAID study⁹¹, a technical potential of forest-based biomass in BiH is 28.04 PJ (7788.9 GWh). The main woody biomass sources are: firewood, forest residues, small branches, stumps and

⁸⁸https://www.researchgate.net/publication/315714877_VALUE_CHAIN_ANALYSIS_OF_NON_WOOD_FOREST_PRODUCTS_IN_FUNCTION_OF_SUSTAINABLE_DEVELOPMENT_OF_FOREST_RESOURCES_AND_RURAL_DEVELOPMENT_IN_BOSNIA_AND_HERZEGOVINA

⁸⁹ UNDP (2014). Possibilities of using biomass from forestry and wood industry in Bosnia and Herzegovina. Sarajevo

⁹⁰ <http://sfsa.unsa.ba/nauka/dokumenti/Radovi-2008/Jovanovic-Energetski-potencijal-sumske-biomase-BiH.pdf>

⁹¹ <http://www.usaideia.ba/wp-content/uploads/2016/06/Report-on-current-status-and-BiH-potential-to-build-biomass-power-plants-in-BiH-English-3-31-16-final.pdf>

residues from wood processing industry. UNDP study⁹² made an estimation of 3,754.842 m³ theoretically available forest bases biomass, taking into account 2012 forest production volume. In BiH, the firewood represents the single largest source of woody biomass (1.23 million m^{3v} of theoretically available amount), which is also the most popular source used for the household heating. Besides firewood, forest residues, small branches, stumps as well as residues from wood processing industry are very important sources for woody biomass potential (1.9 million m³ of theoretically available amount). On easily accessible locations, it's not necessary to make high investments in order to collect small branches and wood residues. Significant quantities of wood residue come out during the production veneer, sawn timber and furniture, in the wood processing plants.

As mentioned earlier, there are some specific forest ownership patterns in BiH, as well as in the whole Balkan region. Hence, state owned forests represent the most significant source of all forest assortments, including woody biomass. A demand for energy keeps rising on a global level, which is why private forests may have an important role when it comes to energy production from woody biomass. Attitudes and perceptions of PFOs toward forest potential for energy production are of huge importance. A study⁹³ which included data from 1400 PFOs showed a relatively high level of willingness (38% - 55% of respondents) to manage their forests in order to produce woody biomass. Besides, young forest owners showed higher level of interest to become a supplier of woody biomass.

The ongoing growing trend of interest for using woody biomass in the world, has slowly expanded in BiH. The increase of interest could lead to expansion of forestry activities in this area, but it can also have negative effects, meaning degradation and deforestation of forest ecosystems. Hence, all future activities and research should be implemented with participation of all relevant stakeholders, through joint initiatives and knowledge/experience exchange.

8.5 Plantations of fast growing trees

Fast-wood plantations represent intensively managed commercial plantations, set in blocks of a single species, that are intended for industrial round wood production at high growth rates (mean annual increment of no less than 15m³ per hectare). Plantations like these are usually managed as short "rotations"(growing cycles) of less than 15 years, often for the production of industrial raw materials of biomass for energy.⁹⁴ The fast growing species can be afterwards exploited intensively for the purpose of heat energy production for a period of 25-30 years when their yield becomes lower, and it is recommended to either renew the plantation of fast growing trees or to use the land for other purposes. One of the main advantages of fast growing species cultivation is that their yield is 2-4 times higher in comparison to yield of regular forest. It's possible to distinguish different ecosystems within fast-growing plantations, that are managed for different economic objectives, with different intensities of technical intervention and different levels of productivity. Methods of establishing and managing plantation crops of fast-growing trees, the length of a production cycle or the planting material used, depend mainly on the goal of the plantation and the purpose of the produced biomass.

During the selection process of fast growing trees, climate conditions and soil quality should be taken into account, as well as advantages and disadvantages related to plantations of different fast growing trees. Some of the species that could be cultivated in CS are:

⁹² UNDP (2014). Possibilities of using biomass from forestry and wood industry in Bosnia and Herzegovina. Sarajevo

⁹³ https://www.researchgate.net/publication/279910662_Private_forest_owners_willingness_to_supply_Woody_biomass_in_selected_South-Eastern_European_countries

⁹⁴ <http://www.fao.org/forestry/42658-0b8ddd1c5c20b4980467f2f4724f445a7.pdf>

- *Populus* – Poplar tree
- *Salix* – Willow tree
- *Robinia pseudoacacia* - Black locust
- *Paulownia elongata* - Princess tree
- *Miscanthus*.

Different species of trees could be used for fast-wood plantations, but it's highly necessary to perform a soil analysis of the chosen location. However, a certain level of caution is recommended during this process, considering the fact that fast growing trees are mostly non-native tree species that could significantly change the structure of native forests. There are some concerns that fast-growing plantation could negatively affect the biodiversity, if for example a natural forest is cleared in order to make way for fast growing plantation. But, if fast growing plantation is established on a degraded land, it might bring an increase in biodiversity and could lead in positive impacts (trade-offs).

When it comes to fast-growing trees plantations in CS, it should be noted that experimental plantations of fast-growing trees were foreseen, among other capital forestry projects in CS. According to Operational plan⁹⁵, an experimental plantation of *Paulownia elongata* was established in order to examine the possibilities of cultivation and utilization in biomass production.

There were also some other initiatives to start with fast-wood plantations, but most of them stay at the level of idea and plans for the future.

⁹⁵ Operational plan for silvicultural practices and forest protection in CS in 2016. Ministry of Economy. CS

9. Conclusions and the Way Forward

9.1 Conclusions

Traditionally, forest resources management in CS i.e. FBiH is entirely formulated by bodies that have constitutional authority (public forest administration) and is based on a hierarchical, top-down approach. In general, there is a lack of participation and stakeholder cooperation in forest-related planning processes. Private owners are almost not represented in forest policy at any level, due to the lack of independent interest associations.

PFOs' interests are mainly in the hands of public forest administration. Taking into consideration that management of private forests must be done in line with the Private Forest Management Plans which is adopted by the public forest administration (Cantonal Administration for Forestry), PFOs do not have a lot of opportunity to decide on the objectives of managing their forest property.

The main problem regarding assessment of the state of private forests in CS is the lack of relevant reports / information on private forest, both at the levels of the FBiH and CS. Even the official number of PFOs in CS is not known (but estimated to be around 17,000). Individual properties are fragmented and the number of owners is increasing as a result of continuous division owing to inheritance processes. The fragmentation of the private forest property and the large number of plots (app. 1.75 land plot per owner with average size of 0.41 ha) represent problem in sustainable management of private forests. According to the survey, average area of private forest property in the sample is 1.41 ha (significantly higher than obtained data from Cantonal Administration for Forestry, but it is possible that the sample included PFOs who own larger areas of private forests). On average, PFOs of CS who possess more than one plot, possess 2.42 plots with average area of 2.3 ha.

Other institutional, legal and technical problems can be grouped as follows:

- lack of legal regulations at the FBiH level and unfavourable legal regulations at cantonal level
- highly complex organization of the forest management administration
- insufficient capacity as well as budget of Cantonal Administration for Forestry
- lack of information systems - unresolved financing of private forests (especially from the aspect of silvicultural works)
- absence of certified private forests in FBiH (BiH also)
- lack of relevant reports / information on private forest, both at the level of the FBiH and at the cantonal level considering the fact that continuous monitoring program aimed to generate information on state of private forests and SFM is not established
- unreliable estimation of volume increment: different methodology in developing process of Forest Management Plan for public and private forests. Data available for private forests may not reflect the real state
- outdated cadastre and property-legal relations.

Exploitation of private forests by their PFOs is moreover limited with complicated bureaucracy (administration). Based on this analysis of provisions regulating issues related to private forests owners it can be concluded that the Law on Forests of CS prescribes many obligations related to the implementation of activities and measures for adequate forest management, but few rights are attributed to PFOs, especially during the development of planning documents. According to the Survey, tree major problems of PFOs are: (i) obligation to request a cutting permit, (ii) obligation to pay a fee for every tree cut, (iii) obligation to obtain instructions and approvals by forest organs prior

to cutting. However, every fifth PFO stated that forest legislation limits the benefits that they have from their forest property.

Other key conclusions of the Survey on PFOs of CS are:

- PFOs still have an interest in their forest, they sell their private property on a small scale and most of them want to leave the forest in the heritage of their children
- majority of them stated that they do not have any problems with their ownership and their forest properties, almost 90 % of them know the boundaries of their private forests plots
- in most cases private forester owners live in the immediate vicinity of their private forests plots
- in most cases their private forests plots are close to roads (average distance of private forest plots that forest road amounts to 1.77 km)
- every third PFO does not use his forest for any purpose. Private forests are mainly used for firewood and small construction wood
- every third PFOs benefits from his private forest, whether it's an additional income or a substantial income (decreasing household cost by using wood in various ways)
- majority of PFOs use their forest to get firewood for their own needs. Other activities that PFOs are performing in their private forests are grazing cattle, exploitation of the industrial wood, environmental protection, NTFP's and production of firewood and charcoal for sale but in very small scale
- a large portion of smallholder forest owners are not fully familiar with legislation and their responsibilities for managing their forests, as well as their rights and opportunities for putting this resource into function of livelihood security.

Compared to relatively intensive management of public forests, private forests have been quite neglected by both, forest policy decision makers and forest owners in BIH. However, situation in CS is to a certain extent opposite, taking into consideration that state of private forests in CS is somewhat more favourable than public forests in CS. However, there are many problems in managing of private forests, that can be grouped as follows:

- big number of PFOs: The fragmentation of the property and the large number of plots (17,000 of PFOs holds 29,800 forest plots; app. 1.752 land plot per owner). Average size of private forest land plot is 0.411 ha
- estimation that 6% of high forests is degraded
- average growing stock in private forests of CS is app. 104.6 m³/ha which is significantly lower than Europe's growing stock per hectare (154 m³/ha)
- average annual volume increase in private forests of CS amounts to 2.8 m³/ha which is almost two times lower than Europe's net annual increment per hectare (6 m³/ha)
- the health status of private forests is not known
- there is no information available for the forest communications or openness of private forests. According to the Survey of PFOs in CS, average distance of private forest plots to (forest) road amounts to 1.77 km. 46 % of analysed plots are in close proximity to roads (distance <2 km)
- reported problems with illegal cuttings and usurpations (especially after the war), mines and mined areas, establishment of the protected areas (limited use or inability to approach to plots), non-updating of data in the cadastre and the problem with mismatch between old and new cadastral survey
- unclearly defined boundaries of the plots: according to Survey app. 70% of PFOs reported that boundaries of their forest plots are not marked in the forest
- according to the Cantonal Administration for Forestry, 1 forester covers territory of 2,216 ha of forest (both state and privately owned), which is not sufficient to prevent illegal activities in the private forests

- poor assortment structure of goods: There is no available information on marketing and value adding of wood which comes from private forests. In general, main wood products produced in private forests of CS are firewood and technical wood. When it comes to technical wood, PFOs in general selling raw material - round wood to local sawmills for further processing. In this regard, the price that PFOs achieved is low and there is no value adding at all
- Insufficient technical equipment of PFOs.

Forest owners of CS have no resources or preconditions to adopt innovative management approaches. The lack of organization among the approximately 17,000 smallholder forest owners in CS is a challenge for implementation of private forest management plans, practicing sustainable forest management, coherent wood mobilization, and proper representation of forest owners in the political process. Smallholder forest owners do not have structure to follow in order to access knowledge, networks, information, and tools for resource sharing to effectively manage their forestland.

Key results of the Survey, related to PFOA establishment in CS are:

- 45 % of PFOs stated that they miss PFOA that would support PFOs in managing their forest e.g. in cultivating and cutting forests, or trading wood and 40 % of PFOs stated that they miss PFOA that would represent their interests by lobbying with political parties and officials at all levels (Municipality, Ministry, Government) for the purpose of improving the overall social and economic state of PFOs.
- for the majority of PFOs, the main condition to join a new PFOA is no membership fee (37%) followed by the conditions: positive results in its work (28%) and if association offers some economic benefits to its members (22%). 15% of PFOs stated that they would not be a member of such association regardless of the conditions.
- only 22 % of PFOs are willing to get personally involved in establishing a PFOA in the area where they live; 42.5 % (almost double) are not willing to get personally involved.
- half of respondents (50.5%) support the idea that all PFOs automatically (under the Law) become members of an interest organization – PFOA. 27 % do not support this idea.
- 61 % of PFOs in the sample are not willing to pay for membership in PFOA, while 37 % are ready to pay. Average amount that PFOs in the sample are willing to pay is 35 BAM (17.90 Euros) per year.
- PFOs of CS most expect from PFOA services like: advice on cutting forests (48%), advice on growing and cultivating forests (38%) and information on legal regulations in the area of forestry (19%). Taking this information into calculation PFOs of CS are more interested in advisory services, than other types of assistance and services.
- PFOs of CS are most willing to cooperate among themselves on following activities: (i) construction and maintenance of forest roads (37.5%), training in the field of forest management (30%) and joint use of cutting and transportation mechanical equipment (26%).

9.2 Recommendations for monitoring and planning

Recommendations for monitoring and planning:

- establish a continuous monitoring of the state of private forests at the cantonal level and reporting at all levels (cantons + FBiH)
- establish a database of PFOs with their contact information
- establish an information system on the private forest sector
- find the possibilities of introducing/suitable model of certification system in private forest sector.

9.3 Recommendations for law and policy

Recommendations for law and policy:

- lobby for the adoption of the Law on Forests at the FBiH level and incorporate amendments related to the reduction of bureaucracy in the management of private forests
- lobby for the harmonization of CS Law on Forests with the law in FBiH
- bring a more realistic methodology for adoption of FMP for private forests; methodology needs to be adapted to the needs of private forest. Bring this methodology in the form of a rulebook in order to harmonize all FMPs in all municipalities of FBiH.

9.4 Recommendations for future institutional settings

Recommendations for future institutional settings:

- establish a PFOA and strengthen its capacities
- find cooperation model for PFOA and wood processing sector
- raise awareness among employees in the public and state forestry sector about the equal importance of private and state forests.

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11. Annexes

11.1 Annex 1- Questionnaire for PFOs

Introductory question:

1. How would you rate your interest in your private forest?

- ☐ Very high interest (1)
- ☐ High interest (2)
- ☐ Neutral (3)
- ☐ Low interest (4)
- ☐ No interest at all (5)
- ☐ I do not know (99)

The need for an interest organization – PFOA :

2. When searching for additional information regarding management of your forest, where you gain information (you may choose more than one answer)?

- ☐ Relatives (1)
 - ☐ Other PFOs near my forest – neighbors (2)
 - ☐ Public forest services (Cantonal Administration for Forestry) (3)
 - ☐ Company “Sarajevo-šume” (Eng. “Sarajevo Forests”) (4)
 - ☐ Interest organization – PFOA (if such exists) (5)
 - ☐ Professional papers and magazines (6)
 - ☐ Nobody (7)
 - ☐ Somebody else (8) (Please specify who)
-

3. PFOs interests can be represented by Cantonal Administration for Forestry, company “Sarajevo-šume”, or through interest organizations - PFOA (if such exist). Please rate how PFOs interests are represented in the CS ?

- ☐ Very good (1) ☐ Good (2) ☐ Neither good nor bad (3) ☐ Poorly (4) ☐ Very poorly (5) ☐ I do not know (99)

4. Do you, as a PFO, miss an interest organization - PFOA , that would support you in managing your forest, for an example, in cultivating and cutting forests, or trading wood?

- ☐ Very much (1) ☐ Yes (2) ☐ Neither yes nor no (3) ☐ No (4) ☐ Not at all (5) ☐ I do not know (99)

5. Do you, as a PFO, miss an interest organization – PFOA , that would represent your interests by lobbying with political parties and officials at all levels (Municipality, Ministry, Government) for the purpose of improving the overall social and economic state of PFOs?

- ☐ Very much (1) ☐ Yes (2) ☐ Neutral ☐ No (4) ☐ Not at all (5) ☐ I do not know (99)

6. What services, aimed at improving your forest management, do you expect from a PFOA (you can choose more than one answer)?

- ☐ Advice on growing and cultivating forests (1)

- ☐ Advice on cutting forests (2)
- ☐ Information on wood market (3)
- ☐ Information on legal regulations in the area of forestry (4)
- ☐ Information on strengthening entrepreneurial activities related to wood and non-wood products (5)
- ☐ Support in forest roads construction and maintenance (6)
- ☐ Training in forest management (7)
- ☐ Support in preparing documents for subventions (subsidies) (8)
- ☐ Other (Please state) (9)

7. What activities in terms of representing your interests do you expect from PFOA (you can choose more than one answer)?

- ☐ Amendments to the Law on Forests (1)
- ☐ Provision of subventions (subsidies) for forest owners (2)
- ☐ Opening new markets (3)
- ☐ Reduction in fees and exemption from taxes (4)
- ☐ Compensation of losses in cases when property becomes part of protected area (5)
- ☐ Resolution of problems in terms of property cadaster and land registry (6)
- ☐ Accelerating the process of forest land restitution and denationalization (recovery of dispossessed) (7)
- ☐ Easing of bureaucracy (8)
- ☐ Other (Please state) (9).....

8. PFOs can receive services, such as consultations in forest cultivation and cutting, and trading wood, from Cantonal Administration for Forestry, company "Sarajevo-šume" (Eng. "Sarajevo Forests"), or through interest organizations – PFOA (if such exist). Which one of these institutions is most relevant for you (circle only one answer)?

- Cantonal Administration for Forestry (1)
- Company "Sarajevo-šume" (Eng. "Sarajevo Forests") (2)
- Interest organization – PFOA (3)
- Private (freelance) consultant (4)

9. PFOs interests can be represented through lobbies to various political institutions by Cantonal Administration for Forestry, company "Sarajevo-šume" (Eng. "Sarajevo Forests"), or interest organizations – PFOA (if such exist). Which one of these institutions is most relevant for you (circle only one answer)?

- Cantonal Administration for Forestry (1)
- Company "Sarajevo-šume" (Eng. "Sarajevo Forests") (2)
- Interest organization – PFOA (3)
-

Membership:

10. Are you a member of a PFOA ?

- ☐ Yes (1) - which one: _____ ⇒ please skip to question number 14.
- ☐ No (2)

11. If you are not a member of a PFOA , and if we assume that such association shall be formed in your area, under what conditions would you be willing to freely become a member of a PFOA (you can choose more than one answer)?

- ☐ If there is no membership fee, or if it is very low (1)
- ☐ If the association is independent from a public administration (Municipality, Canton, Entity) (2)

- ☐ If the association has positive results in its work thus far (3)
- ☐ If the association offers some economic benefits to its members (4)
- ☐ If the association has a large number of members (5)
- ☐ Other (Please state) (6)

12. Would you get personally involved in establishing a PFOA in the area where you live?

- ☐ Very much (1) ☐ A lot (2) ☐ (3) Neutral ☐ Some (4) ☐ Not at all (5) ☐ I do not know (99)

13. Do you support the idea that all PFOs automatically (under the Law) become members of an interest organization – PFOA ?

- ☐ Completely support (1) ☐ Support (2) ☐ (3) Neutral ☐ Do not support (4) ☐ Do not support at all (5)
- ☐ I do not know (99)

14. Are you willing to pay membership if you are sure that you will get good service?

- ☐ No (1)
- ☐ Yes (2)
- ☐ If yes, maximum per year (Please state) (3)

Forest cultivation aspects:

15. Please answer the following questions regarding your forest property:

- a) What is the area of private forest in hectaresorm² or dulum (1)
- ☐ I do not know (2)
- b) Origin of the forest: ☐ from seed (1) ☐ offshoot (2) ☐ mixed (3) ☐ I do not know (4)
- c) Main species: ☐ mostly softwood (1) ☐ mostly hardwood (2) ☐ mixed forest (3) ☐ I do not know(4)

Economic aspects:

16. Have you sold or perhaps purchased forest land in the past 10 years?

a) Purchase:

- ☐ No (1)
- ☐ Yes (2) (please stat how many ha?)

b) Sale:

- ☐ No (1)
- ☐ Yes (2) (please stat how many ha?)

17. What is the main method of using your forest (you can choose more than one answer)?

- ☐ Production of firewood for personal use (1)
- ☐ Production of firewood (including charcoal) for sale (2)
- ☐ Production of timber for personal use (3)
- ☐ Production and sale of industrial round wood (4)
- ☐ Cattle grazing (5)
- ☐ Environmental protection (6)
- ☐ Collection of non-wood forest products (mushrooms, forest fruit, medicinal herbs...) (7)
- ☐ Hunting (8)
- ☐ Other purposes (please state) (9)
- ☐ I do not use it at all (10)

18. Does your forest property comprise of one or more parcels?

- ☐ One parcel (1)
- ☐ More parcels (2), How many parcels? (3):
- ☐ What is the average parcel size (4): ha ☐ I do not know the parcel size (99):

19. How much does your forest income affect your household income, in terms of selling and using wood for personal purposes?

a) Wood sale:

- ☐ very much (1) ☐ a lot (2) ☐ (3) Neutral ☐ a little (4) ☐ not at all (5)

b) Please estimated in BAM _____ (6)

c) Personal purposes:

- ☐ very much (1) ☐ a lot (2) ☐ (3) Neutral ☐ a little (4) ☐ not at all (5)

d) Please estimated in BAM _____ (6)

20. Do you cut wood in your forest every year or during certain periods?

a) For heating

- ☐ Every year (1), if so, how much (m^3)
- ☐ Periodically (2); if so, how much (m^3) in what intervals (every how many years) (3):
.....

☐ I do not cut it at all (4)

b) Technical wood - industrial (logs, lumber)

- ☐ Every year (1), if so, how much (m^3)
- ☐ Periodically (2); if so, how much (m^3) in what intervals (every how many years) (3):
.....

☐ I do not cut it at all (4)

21. Are you willing to cooperate with other forest owners in activities below (you can choose more than one answer):

a) Joint use of cutting and transportation mechanical equipment:

- ☐ very much (1) ☐ a lot (2) ☐ (3) neutral ☐ a little (4) ☐ not at all (5) ☐ I do not know (99)

b) Sharing costs of writing forest management plans:

- ☐ very much (1) ☐ a lot (2) ☐ (3) neutral ☐ a little (4) ☐ not at all (5) ☐ I do not know (99)

c) Sale of forest products:

- ☐ very much (1) ☐ a lot (2) ☐ (3) neutral ☐ a little (4) ☐ not at all (5) ☐ I do not know (99)

d) Training in the field of forest management:

- ☐ very much (1) ☐ a lot (2) ☐ (3) neutral ☐ a little (4) ☐ not at all (5) ☐ I do not know (99)

e) Construction and maintenance of forest roads:

- ☐ very much (1) ☐ a lot (2) ☐ (3) neutral ☐ a little (4) ☐ not at all (5) ☐ I do not know (99)

f) Other (state)

- ☐ very much (1) ☐ a lot (2) ☐ (3) neutral ☐ a little (4) ☐ not at all (5) ☐ I do not know (99)

Institutional aspects:

22. Are you familiar with your forest property borders?

- ☐ Yes (1) ☐ No (2)

a) If yes: Are your forest property borders:

- ☐ marked on the field (1) ☐ unmarked on the field (2) ☐ I do not know (99)
- ☐ clearly marked in the cadastre (3) ☐ not marked in the cadastre (4) ☐ I do not know (99)

b) If no: Do you have certain issues in terms of the cadastre or land registry? (please state)

.....

23. Have you ever had any problems in terms of forest ownership in the past 10 years?

☐ No (1)

☐ Yes (2);

If the answer is Yes, please state the problems

.....

24. Are you familiar with legal regulations in terms of PFOship?

☐ Completely familiar (1) ☐ Familiar (2) ☐ (3) Neutral ☐ Somewhat familiar (4) ☐ Not familiar (5) ☐ I do not know (99)

25. Please mark the legal stipulations that most significantly burden PFOs (you can choose more than one answer):

☐ Obligation to pay a fee for every tree cut (1)

☐ Obligation to request a cutting permit (2)

☐ Obligation to obtain instructions and approvals by forest organs prior to cutting (3)

☐ Obligatory forest management plans (4)

☐ Mandatory wood transport documentation (5)

☐ Other (please state) (6).....

26. On the scale 1 to 5, please grade the quality of information received from the following institutions in terms of your forest management:

(1) Cantonal Administration for Forestry? ☐ very good (1) ☐ (2) ☐ (3) ☐ (4) ☐ very poor (5) ☐ I do not receive information (6)

(2) Company "Sarajevo-šume"? ☐ very good (1) ☐ (2) ☐ (3) ☐ (4) ☐ very poor (5) ☐ I do not receive information (6)

(3) PFOA ? ☐ very good (1) ☐ (2) ☐ (3) ☐ (4) ☐ very poor (5) ☐ I do not receive information (6)

(4) Other (state) ☐ very good (1) ☐ (2) ☐ (3) ☐ (4) ☐ very poor (5) ☐ I do not receive information (6)

(5) I do not receive any information from any institution

27. How much do legal regulations on private forest limit the benefits you have from your forest property?

☐ very much (1) ☐ a lot (2) ☐ (3) Medium ☐ a little (4) ☐ not at all (5) ☐ I do not know (99)

28. Have you ever been granted any type of subventions (incentive) from a public forest service?

☐ No (1)

☐ Yes (2);

If yes, for what?

Sociological aspects:

29. Sex: ☐ Male (1) or ☐ Female (2).

30. How old are you?

31. Are you the sole owner?

☐ Yes (1)

☐ No (2);

If not, that means you have a co-owner of your forest property. Who (you can choose more than one answer)?

☐ wife/husband (1) ☐ parents (2) ☐ brother/sister (3) ☐ relatives (4) ☐ children (5)

32. What is the average distance of your forest property from your house (in km).....

33. What is the average distance of your forest property from road (in km).....

34. How many residents reside in the place where you live?

- ☐ Less than 1,000 (1)
- ☐ 1,001 – 5,000 (2)
- ☐ 5,001 – 20,000 (3)
- ☐ More than 20,000 (4)

35. What is your profession?

- ☐ Farmer (1)
- ☐ Private entrepreneur (2)
- ☐ Manual worker (3)
- ☐ Student (4)
- ☐ Unemployed (5)
- ☐ Pensioner (6)
- ☐ Other (please state) (7)

36. Official education in Forestry?

- a) Yes
- b) No

37. What is your education level?

- ☐ Not completed primary school (1)
- ☐ Primary school (2)
- ☐ A three-year high school (3)
- ☐ A four-year high school (4)
- ☐ Junior college (5)
- ☐ College (6)
- ☐ Other (please state) (7)

38. Average household income?

- ☐ <500 KM (1)
- ☐ 500-1.000 KM (2)
- ☐ 1.500-2.000 KM (3)
- ☐ >2.000 KM (4)

39. Did you:

- ☐ purchase your forest property (1)
- ☐ inherit your forest property? (2)
- ☐ both of the above (3).
- How much did you purchase (4)?....ha
- How much did you inherit? (5).....ha

40. Do you wish to:

- ☐ Leave your forest property to your successors (1)

☐ Sell your forest property? (2) Why?

THANK YOU FOR YOUR TIME!

Municipality:

Cadastral Municipality:

Local community:

Date:

Interviewer signature: