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SUSTAINABLE FOREST MANAGEMENT IN THE WESTERN BALKAN REGION

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SUSTAINABLE FOREST MANAGEMENT IN THE WESTERN BALKAN REGION

Regional synthesis report

Chapter I. Abbreviations

WB	Western Balkans
SFM	Sustainable Forest Management
FBiH	Federation of Bosnia and Herzegovina
FDS	Forestry Development Strategy
MAFWM	Ministry of Agriculture, Forestry and Water Management
EU	European Union
IPA	Instrument of Pre-Accession
NATURA 2000	Network of protected areas of the European Union
RoA	Republic of Albania
MAFWE	Ministry of Agriculture, Forestry and Water Economy
FSC	Forest Stewardship Council
GEF	Global Environment Facility
IBRD	International Bank for Reconstruction and Development
SIDA	Swedish International Development Cooperation Agency
EUTR	EU Timber regulation
FIS	Forest Information System
LFMWB	Landscape Fire Management in the Western Balkans
FAO	Food and Agriculture Organization of United Nations
IPARD	Instrument for Pre-accession Assistance for Rural Development



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Chapter IV. Introduction

This report gives a brief overview of the national reports on sustainable forest management in Albania, Federation of Bosnia and Herzegovina, Kosovo^{*1}, North Macedonia, Montenegro, Republic of Srpska and Serbia.

Forests of the Western Balkan region are a valuable resource, rich in biodiversity, while forestry in this region has a long tradition. The forest cover in WB countries varies. The lowest forest cover percentage is recorded in Serbia (29.1%), while the Federation of Bosnia and Herzegovina has the largest share of forests (63%), followed by the Republic of Srpska (53%). The forest cover and standing volume of all WB countries are presented in table 1 and graph 1.

Table 1. Forest cover in WB countries

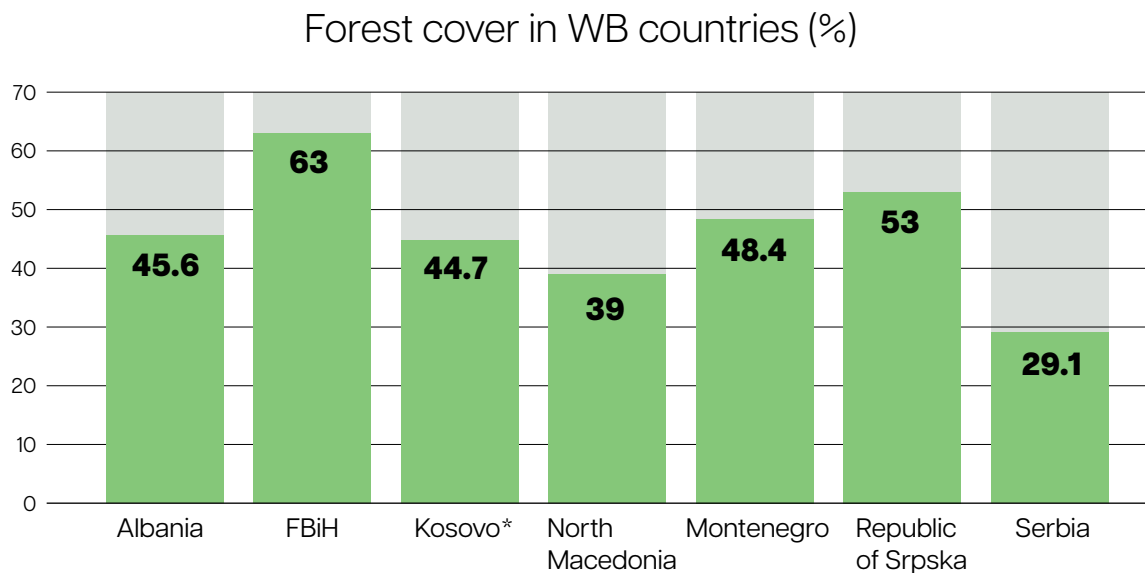
Country/territory	Forest cover (ha)	Forest cover %	Growing stock (m ³)
Albania	1,309,767	45.6	57,700,000
FBiH	3,231,500	63.0	435,000,000
Kosovo*	481,000	44.7	40,508,000
North Macedonia	1,001,067	39.0	75,939,573
Montenegro	668,808	48.4	116,216,700
Republic of Srpska	1,309,785	53.0	254,242,291
Serbia	2,254,000	29.1	362,487,417

According to the ownership structure, Serbia and Montenegro have a similar percentage of state and private forests, while Albania has the biggest share of state/public forests – 97%, followed by North Macedonia with 89% of state-owned forests and the Republic of Srpska with 77%. One of the specific features of the region is that in Serbia the biggest owner of non-State forests is the Serbian Orthodox Church. Since 2016, 33.063 ha have been returned to the Church according to the provisions of the Law on restitution of the properties to Churches and religious communities.

Regarding the standing volume, in Albania, the Republic of Srpska and Serbia, beech predominates with approximately 40% of the total volume. In Kosovo*, beech accounts for 45.7% of the total volume, while this percentage is even higher in North Macedonia with more than 50%. In addition to this, broadleaved trees dominate forests in Montenegro with a share of 76.2% of the total forest area, and a share of 59.8% of standing volume, while conifers with a share of 23.8% of the forest area account for 40.0% in the standing volume.

Regarding the annual felling in all WB countries, the highest felling was recorded in the Federation of Bosnia-Herzegovina in the amount of 5.7 million cubic meters, followed by Serbia with 3.35 million cubic meters and Republic of Srpska with 3 million cubic meters. The annual felling volume in Kosovo* reaches 1.6 million cubic meters, while in North Macedonia the volume is 0.7 million cubic meters. In this regard, it is worth mentioning that in Albania a ban on commercial harvesting activities is imposed in the public/private growing stock covering the whole territory of the country.

¹ "This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo declaration of independence"

Figure 1. Forest cover percentage in WB countries

Chapter V. Strategic and legal framework in the Region

Strategic framework

When the strategic framework in the Western Balkans is concerned, it can be noted that all countries, except for the Federation of Bosnia and Herzegovina, have strategic documents which regulate the forestry sector. Those documents define the strategic orientation of forestry sectors in the WB, and provide a basis for the implementation of the SFM principles through multifunctionality, sustainable use of forests, biodiversity conservation, etc. Table 2 gives an overview of strategic documents in the WB, while the accompanying text reveals the specifics within the strategic documents of different countries.

Table 2. Strategic documents for forestry in the WB countries

Country/territory	Name of the document	Year of adoption	Duration
Albania	On the policies of the forest sector in Albania - 2030	2018	2018-2030
FBiH	Forestry Programme of the Federation of Bosnia and Herzegovina ²	-	-
Kosovo*	Forestry Development Strategy (FDS) and Action Plan (AP)	2021	2021-2030
North Macedonia	Strategy for sustainable development of forestry 2006-2026	2006	2006-2026
Montenegro	National Forest Development Strategy for 10 years (2014-2024) – revised in 2018	2014	2014-2024
Republic of Srpska	Forestry Development Strategy of the Republic of Srpska ³	2011	2011-2021
Serbia	Forestry Development Strategy of the Republic of Serbia	2006	Not defined

In Bosnia and Herzegovina there is no national forest policy and the responsibility for preparing the forest policy and strategy is the duty of two entities: the Federation of Bosnia and Herzegovina, and the Republic of Srpska. In the Republic of Srpska, the Forestry Development Strategy was adopted in 2011, and it expired in 2021 (the new one for the period 2022-2032 is in the process of preparation). On the other hand, the Forestry Programme of the Federation of Bosnia and Herzegovina (FP FBiH), initially began being drafted in 2009 and composed of a general and an implementation part, is still not fully adopted, since only its general objectives part was adopted in 2017. According to the author of the Country report for the Federation of Bosnia and Herzegovina, the adoption of the implementation part is questionable because 12 years have passed since the beginning of the process and it is necessary to update the studies and collect data in order to get an overview of the current situation in the FBiH forestry sector.

In Montenegro, the National Forest Development Strategy was accompanied by a five-year Action Plan that developed activities for achieving the objectives, indicators, relevant institutions and sources of funding. The strategy was based on the concept of forest concessions, which was then developed through long-term concession agreements. In 2018, the Government of Montenegro decided to revise the existing Strategy. The MAFWM defined new development goals directed towards forming a state-owned forest management company, and dropping the concept of concessions in forestry, since the concession system showed a large number of weaknesses, while significant development of the wood industry was not achieved.

Kosovo* developed the National Forestry and Reforestation Program of Kosovo* (NFRP) 2018-2027 and the National Forest Health Program (NFHP) 2018-2027. The NFRP aims to increase Kosovo's forests by 5%, but it has been evaluated as an overambitious and difficult to implement program. Meanwhile, the NFHP was aimed at improving the health of forests, but its implementation remains a challenge for the responsible institutions of forest administration and management due to the lack of human capacities and financial resources.

2 Only the general part of the Program was adopted in 2017.

3 The Forestry Development Strategy of the Republic of Srpska for the period 2022-2032 is in the final phase of development

Legal framework

Table 3. Legal documents on forestry in the WB countries

Country/ territory	Name of the document	Year of adoption	Year of amendment
Albania	Law on Forests	2020	-
	Law for the declaration of the moratorium in the forests of the RoA	2016	-
FBiH	Law on Forests ⁴	2002	2003, 2004
Kosovo*	Law on Forests 2003/3	2004	n/a
North Macedonia	Law on Forests	2009	2011, 2013, 2014
Montenegro	Law on Forests	2010	2011, 2015
Republic of Srpska	Law on Forests	2008	2013, 2020
Serbia	Law on Forests	2010	2012, 2015, 2018

The legal framework for the forestry sector in the WB is regulated by national Laws on Forests, which were adopted in all countries after the year 2000, and all of them amended one or more times except the Law on forests in Albania which is from the year 2020 (Table 3).

One of the main characteristics is that in the Federation of Bosnia-Herzegovina, in accordance with the Decision by the Constitutional Court of the FBiH from 2009, the Law on Forests was no longer in force as of 27th November 2009. As a preliminary solution pending the adoption of the new law on forests, the Government of the FBiH adopted the Regulation on Forests, and this Regulation as per the Decision of the Constitutional Court of the FBiH from 2011 should be in force until December 6, 2011. Since the Regulation on Forests is no longer in force, as of December 6, 2011 and as the Law on Forests hasn't been adopted yet, the forest sector of the FBiH is legally unregulated at the level of this entity.

In Montenegro, the amendments to the Law on Forests are planned for 2023, and those should create a legal basis for the establishment of the State enterprise for forest management.

In Albania, additionally to the Law on forests, the Law for local self-government regulates the organization and functioning of local government units, and defines that municipalities are responsible for the administration of forests and pastures, in accordance with the existing legal framework for forests. In addition, the Law for the declaration of a moratorium on forests in the RoA in Albania imposes a ban on commercial harvesting activities in the public/private growing stock throughout the territory of the Republic of Albania, the trading of harvested timber products, the ban on the export of raw timber, timber construction material, firewood, as well as wood charcoal from 2016 when it is adopted, for the period of ten years.

In addition to the above noted, the legal framework regulating nature protection influences sustainable forest management in all countries by regulating the use of forest resources in protected areas.

4 Not in force since 2009

Chapter VI.

Institutional framework in the Region

The institutional framework for the forestry sector in the WB region is characterized by different institutions for administration tasks (Table 4), and different organizations for forest management.

Table 4. Institutional framework for forestry in the WB countries

Country/territory	Institution	Department/section
Albania	Ministry of Tourism and Environment	National Forestry Agency
FBiH	Ministry of Agriculture, Water Management and Forestry	Sector for forestry and hunting FBiH Forest Office
Kosovo*	Ministry of Agriculture, Forestry and Rural Development	Kosovo* Forestry Agency
North Macedonia	Ministry of Agriculture, Forestry and Water Economy	Sector for forestry and hunting Forest Police Department
Montenegro	Ministry of Agriculture, Forestry and Water Management	Forestry administration
Republic of Srpska	Ministry of Agriculture, Forestry and Water Management	Department for Forestry and Hunting
Serbia	Ministry of Agriculture, Forestry and Water Management	Forest Directorate

In all WB countries, the main administration bodies for the forestry sector are different Ministries (Table 4), mainly the Ministry of Agriculture, Forestry and Water Management (Water Economy), or the Ministry of Agriculture, Forestry and Rural Development in Kosovo*. Only in Albania, the forestry sector is under the Ministry of Tourism and Environment. In Albania and Kosovo* a Forestry Agency is established as a body within the Ministry, while in North Macedonia there is a Sector for forestry and hunting, and in FBiH both a Sector for forestry and hunting and a FBiH Forestry Office. In Montenegro the main forestry body is the Forestry administration, in the Republic of Srpska a Department for Forestry and Hunting is established, while in Serbia there is a Forestry Directorate as an administrative body within the Ministry of Agriculture, Forestry and Water Management.

One of the specifics in North Macedonia is the existence of a Forestry Police, as a sector within the MA-FWE, with duties to protect the forests in accordance with the Law on Forests.

On the other hand, the process of transferring use rights for small forest areas to the local communities has been in progress in Albania since 1996, as a procedure to increase the awareness and responsibility among local actors. With the 2016 administrative reform, all the forest areas transferred to the communes became property of the newly established 61 municipalities, completely changing the ownership structure in the forestry sector in Albania. For the purpose of administrative tasks of the communal forests in each of the municipalities there is a municipality structure responsible for forest governance.

At the Federation of Bosnia and Herzegovina level, within the Ministry of Agriculture, Water Management and Forestry, there are two responsible units. The first one is the Forestry and Hunting Depart-

ment, which is responsible for all aspects relating to forest law and related legislation. It acts as a permission issuing unit; e.g., change of land use and forest management planning. The second, the Federal Forestry Administration is responsible for forest silviculture and protection, the users of forests and subsidies and support payments for forestry, as well as the development and monitoring of processes in forestry including an overall monitoring role in relation to activities within the forestry sector. FBiH devolves its management competencies to the Cantonal governments. Each Canton has competencies over the forest resources within its administrative boundaries.

In Serbia, the institutional framework is organized at the state and provincial levels. At the state level, the Ministry of Agriculture, Forestry and Water Management is in charge of state administration tasks related to forestry through the Forest Directorate. At the level of the Autonomous province of Vojvodina tasks for the implementation of administrative jobs in the forestry sector are delegated to the Provincial Secretariat for Agriculture, Water Management and Forestry.

Chapter VII. A description of projects related to Sustainable Forest Management (SFM) in the past 5 years

In the past period different projects in relation to Sustainable Forest management were implemented in the WB sector. The main financing institutions for this region were: the World Bank, GEF, IBRD, the Kingdom of Norway, SIDA, EU-IPA etc.

In almost all of the countries these projects were devoted to the development or improvement of the strategic and legal framework, or institutional framework, as well as the NFI implementation. In addition to this, in some countries (Albania, Serbia, Kosovo*) works are financed to establish Forestry Information Systems, and the funding for that purpose comes from different institutions (GEF, EU IPA, etc.)

One of the facts worth mentioning is that according to the author of the Country report from Montenegro, in this country not a single international development project in the field of forestry has been active in the past 8 years. After the completion of the FODEMO project, the European Commission asked Montenegro to complete the part of the project related to the FIS (Forest Information System), so one part was financed from budget funds, while the overall completion of the FIS was applied for through the IPA III instrument. This project was supposed to start in 2019, however, due to the COVID-19 pandemic, the EC diverted financial resources to the fight against the pandemic, so it was not realized. Currently, after the re-application and approval of the project, it should start its implementation in December 2022.

Completed regional projects

One of the regional projects was the "Regional action for combating forest crime and corruption" project. The project was implemented in the 2018-2021 period, in four Western Balkan countries: Bosnia and Herzegovina, Serbia, North Macedonia and Montenegro. The project partners were: FEA, the CNVP Foundation and Green Home, with the financial support of the Norwegian Ministry of Foreign Affairs. This project created more enabling conditions for the control of forest related crimes, including an innovative information system, as well as the improvement of the monitoring mechanisms through practical sets of indicators and surveys. Based on detailed analyses and lessons learned from the outdated

and mostly not implemented regional/national policy documents and action plans related to this or similar issues, new national action plans were developed with recommendations for a more efficient regulatory, monitoring, control and supervision actions for combating forest related crimes and corruption activities. The overall objective of the project was to achieve good governance in the forestry sector and combat forest crime and corruption, by increased transparency and networking in the four target countries (North Macedonia, BIH, Serbia and Montenegro). The specific objectives of the project were: to establish a regional network and exchange knowledge related to forest crime and corruption, improve access to the information and establish control mechanisms, related to forest crime and corruption, develop monitoring mechanisms, strengthen the capacity of stakeholders to fight forest crime and corruption, and develop National action plans to combat forest crime and corruption.

Ongoing regional projects

“Regional program for landscape fire management in the Western Balkans (2022-2026). The Regional Project in the inception phase with a duration of 4 years is financed by the Swiss Confederation. The overall goal of this LFMWB is to increase the resilience of the Western Balkan forests and landscapes against fires, benefit the people who depend on these landscapes for their livelihoods and socioeconomic development. This goal is aligned with the SDC’s Framework strategic components: Climate-resilient development and Sustainable management of natural resources. Program outcomes: (1) A lasting regional network is established and contributes to cross-boundary knowledge exchange and cooperation in landscape fire management (LFM); (2) Strengthened capacities on broader LFM approaches allow for an effective cross-sectoral collaboration at multiple levels; (3) Revised policies and strategies on LFM are in place to support sustainable landscape management at the local, national and regional levels; initiate inter-sectoral collaboration, improved working approaches, involvement of the community and key stakeholders in the development processes. The project partners are supported in taking the driving seat to ensure the sustainability of the Program interventions at the national, regional, and international levels. The LFMWB Program is establishing strong and trusted national and regional networks for LFM. The objective of establishing the networks is to launch multi-stakeholder policy dialogues, foster better cooperation and strengthen the capacities in the WB region. Furthermore, the Program contributes to encouraging the integration of LFM as an essential part of climate change adaptation and mitigation strategies.

Chapter VIII. Implementation of SFM principles in the Region in the previous period and eventual challenges

Western Balkan countries support all processes defined by the EU and follow the EU policy in all fields, including the field of Forestry. An important policy process defined for the Western Balkans as a part of the European Green Deal is the Green Agenda for the Western Balkans, and the Declaration on this process was signed in November 2020. The Western Balkan countries pledged to implement measures in the areas of climate change and pollution prevention, energy development, circular economy, as well as biodiversity development, sustainable agriculture etc.

The implementation of SFM in the Western Balkan countries will be shown through six Pan-European criteria for sustainable forest management.

Criterion 1: Maintenance and Appropriate Enhancement of Forest Resources and their contribution to Global Carbon Cycles

According to the data from the National reports, the area under forests in the WB region is expanding. This is happening mainly in rural areas, due to the result of the migration of local inhabitants to urban areas and abandonment of extensive agriculture. Only in Albania according to the NFI from 2018, the area of forests has decreased by about 50,000 ha compared to the NFI from 2004, and the standing volume decreased by almost 30 million m³ compared to the 1985 inventory.

In Albania, the moratorium on forest commercial activities in 2016 has had an impact on the prevention of illegal activities, but its effect is not yet seen in the improvement of forest surfaces or increase in the volume of forest piles.

In North Macedonia, according to FAO there was a decrease of the above-ground growing stock (based on general small scale data and methodology of land cover classification) from 2000 to 2020. The reasons for a decrease of biomass could be forest fires and cutting, but particular attention should be paid when considering this, since there has been no forest inventory since 1979.

Criterion 2: Maintenance of Forest Ecosystem Health and Vitality

The health condition of the forests in WB countries is permanently monitored. This is done mainly by managers of forests, as well as within the International Co-operative Program on the Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests) where certain WB countries are members.

The key threat to forest resources in WB countries are forest fires, which occur at irregular intervals and depend on weather conditions. Having in mind that big droughts occurred in 2012 and 2022, and that there is a big chance for the occurrence of droughts in the future, the forestry sector faces challenges regarding this issue.

Criterion 3: Maintenance and Encouragement of Productive Functions of Forests (wood and non-wood)

Forestry represents one of the most important economic activities that support rural development, but it is significantly influenced by migration and an increasingly unfavourable demographic structure, not only for the expansion of forests, but also due to the lack of labour force.

Construction and maintenance of forest infrastructure, especially forest roads represent an important aspect of SFM. Forest roads are a precondition for the rational, economical and integral management of forest and hunting resources. The importance of forest roads for forest management, and especially for the use of forests is huge. Through forest opening, conditions are created for a greater use of mechanized equipment for felling and production of wood assortments, as well as for the transport of these assortments, tending of forests, protection against pests and diseases, as well as for the protection against forest fires.

In Albania, the general trend of decreasing forest productivity is the result of the methods used for their over-exploitation, as well as the inability of state structures to control illegal logging and corruption in the timber market of wood materials, domestically and abroad.

In Montenegro, the existing system of forest management is unsustainable due to the low level of valorization of forests and, accordingly, the low level of income, as well as the financing of the sector. The application of the concession model of forest use has led to low state revenues in forestry and the enrichment of concessionaires. Hence, the abandoning of the concession model of forest use, which was dominant in the past twenty-year period, appears as an imperative.

Criterion 4: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems

The preservation of biodiversity has become the basis of natural resource management. Due to the integration of biodiversity conservation into other sectors it is clearly indicated that biodiversity should be integrated into productive sectors, especially those that directly use and manage natural resources, such as forestry.

Some of the WB countries have a certification scheme (FBiH and Serbia). It is worth mentioning that although FBiH do not have an adopted set of national criteria and indicators for sustainable forest management, BiH is a unique country in the region by the fact that it has adopted a national FSC standard for SFM. In addition to this, all forests in Serbia that are managed by public enterprises for forest management are certified within the FSC scheme, that considers different aspects, including biodiversity, and independent evaluators are in charge of FSC in their annual report, evaluating if forest management is in accordance with the FSC criteria.

Criterion 5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably soil and water)

Forests in the WB region among other functions also have protective functions. These functions can be for the protection of water reservoirs, watersheds, as well as the protection of soil from erosion. On the other hand, the protective function of forests is defined for the protection of settlements and infrastructure from water and erosion.

It is worth mentioning that among the WB countries, Kosovo* does not have forest areas designated as protective forests for the purpose defined by criterion 5 of the Helsinki resolution, but for the future there is a recommendation to work on the fulfilment of this environmental obligation.

In addition to this, the establishment of the NATURA 2000 network started in some countries and is at different stages at the moment.

Criterion 6: Maintenance of other Socio-Economic Functions and Conditions

Forestry is the main source of raw material for the wood industry in the WB region. In some of the WB countries the value of production of the forest-based industry and wood industry is increasing, while also increasing the level of finalization of wood products.

The recreation function became more important during and after the COVID 19 pandemic, and in the modern way of living. Especially forests that are close to the cities receive more attention from the local population.

In addition to this, the use of non-wood forest products in the last decade is also increasing. This is mainly connected with the use of medicinal plants, forest fruits and mushrooms, as well as the use of stone and gravel from forests.

It should be mentioned that Albania is the only country in the region, which supports the Forestry sector under IPARD III program (Measure 11: Forestry) with approximately 7 million euros for afforestation and reforestation of degraded forest areas of around 1700 ha.

Chapter IX. Areas of possible further SFM development in the Region

Forest strategies as a future common vision of the forest sector are missing or need to be updated in most WB countries (they should include climate change, bioeconomy, forest biodiversity etc.). The monitoring of the proposed strategic objective should be conducted on the regular basis against clear indicators of success. Intensive participation needs to be included in order to create greater acceptance of objectives inside, but also outside of the forest sector.

The legislative framework needs to be improved in almost all WB countries based on strategic objectives. The legislative framework needs to be adaptable due to the fast-changing environment. Laws and bylaws should have general norms described, but most technical elements should be in the form of technical guidelines that could be quickly updated or changed. The new Law on Forests in FBiH needs to be developed and adopted as the main instrument of the implementation of strategic objectives, while other WB countries have forest legislation in force. Initiatives on legal timber trade should be incorporated into the national legislative framework as one of the important instruments supporting SFM. The biggest discrepancy can be seen in the control of this process, having in mind that although forests are managed according to the SFM principles, illegal transport and trade deteriorate the efforts towards SFM. The creation of a legal framework and organizational set up for introducing the EUTR procedure should be the contribution towards achieving SFM in terms of legality and trade.

Forest legislation needs to create a clear connection towards rural development and EU accession initiatives for supporting rural development. The forest sector should recognize and use the opportunity from EU rural development instruments as it was done by the agricultural sector several years ago in all countries in the WB. Some kind of a financial support is present in all countries, but there is a need for long-term comprehensive funds for the establishment of new forests or nature-based solutions, as well as support for the implementation of strategic objectives towards SFM. In addition to this, only in Albania funds for forestry are available from IPARD III, while other countries do not use these funds to their full potential.

The concept of close to nature forest management is not well recognized in the WB region. The introduction of CNFM could be beneficial for the WB sector especially in relation to climate change adaptation options. Support to the creation of mixed stands with a vertical structure, the promotion of natural regeneration and introduction of target-oriented forest management approaches could have an impact on the whole forest area in each WB country. The creation of instructions on forest management for forest practitioners, which clearly explain management throughout the entire production period, is of importance for adapting the management strategy in a climate changed environment in the future. Intensive training activities need to be conducted in the whole region in order to introduce the ideas of CNFM to practical understanding and their implementation to regular forest management practice.

In all countries there are state administration bodies that are in charge of forestry, and forestry is mainly in the same Ministry with Agriculture, where the agricultural sector plays the dominant role. In Montenegro, there is a need for establishing of a state-owned company (as a result an abandoned concession system which lasted for 20 years) which will primarily perform forest utilization (felling, production of wood assortments and their transport) and commercial activities in forestry (sales of wood products).

Insufficient human resources are a challenge present in all WB countries. First of all, appropriate human resources are lacking in the state administration, as well as experts for forest management and skilled

forest workers. The lack of labour force is evident during afforestation, silvicultural works and mainly in forest utilization, due to the migration from rural areas to cities, as well as to foreign countries.

Another challenge is the establishment of new forests, where the main issue is missing proper afforestation or nature-based solution strategies in some countries, while others are facing the inaccessibility of agricultural land of lower site index class. Conflicts over access to the land for new forest are evident between forestry, agriculture, nature protection and other sectors. In addition to this, there is a need for the proper selection of tree species that correspond to the changed climatic conditions defined by climate scenarios that will ensure long-term proper growth and development of forest ecosystems in the future.

Low quality or insufficient network of forest roads is an issue that is present in almost all of the countries. Good forest road network is a precondition for SFM, as well as for different activities in forestry and forest-related sectors, including fight against pests and diseases, as well as fight against forest fires. Capacity building for proper planning and implementation of forest roads and a secondary forest road network is of essential importance in the future.

The management of private forests is a challenge in all WB countries except in Albania. These challenges could be observed with regard to the management planning, communication with private forest owners and consultation with the private sector, having in mind that in some countries private forests occupy almost 50% of the forest area. Sustainable Forest Management of private forests is a great challenge especially in a changed socio/economic environment and depopulation of rural areas in the WB aiming to increase the resilience of forests through the adoption of most climate and biodiversity friendly forest management practices. Forestry is mainly not recognized in rural development programs, although it is the main source of income for the population in rural areas (in many cases private forest owners). This is something that should be more pronounced in the future, especially related to the accessibility of different funding opportunities.

Bad condition of the Cadastre is one of the gaps that the forestry sector in the WB is facing. The precondition for Sustainable Forest Management is a good status of the cadastre, especially related to the user rights, the records on the actual state of the cadastre, up-to-date management of cadastral changes, up-to-date information on changes in land use, and marking of property boundaries between different owners.

Forest information systems are also one of the preconditions for SFM, considering the fact that different databases are available, in different forms and different data sets, and in different institutions. In addition to this, a modern and integrated forest fire information system is lacking. The creation of a new system of early warning based on recent technology should be an important mitigation instrument during a dry and rainless summer especially in pure coniferous stands. Capacity building in remote sensing technologies is essential for the monitoring of large-scale areas in short timeframe.

The nature protection sector and designation of protected areas have a specific impact on the forestry sector and SFM. In addition to this, NATURA 2000 is missing, as is its integration into forest management planning. Regional cooperation and the exchange of experience with other countries would be of foremost importance for a proper integration of NATURA 2000 sites into forest management practice. Capacity building for the integration of NATURA 2000 into forest management planning is of essential importance in order to avoid management conflicts in the future. In some countries (for example in Serbia this process is run by the Nature Protection sector although most of the Natura 2000 sites are on forest land). The aspect of biodiversity is not well integrated into forest management planning. The lack of permanent monitoring of the implementation of forest strategies and their effect on forest biodiversity is missing. The creation of a methodology for biodiversity assessment is missing in almost all WB

countries as well as management practice for the maintenance and improvement of forest biodiversity. Continuous education and the system of lifelong learning implies a permanent transfer of knowledge and the development of professional abilities and skills of employees in the forestry sector, which should be achieved through mandatory and optional educational programs, throughout the professional carrier. The institutional set up for lifelong learning is missing in almost all WB countries. The establishment of a sustainable knowledge transfer from science to practice is of essential importance for SFM in the future. The establishment of an institutional set up for long term research and demonstration plots is an important precondition for the training of people in the field and demonstrating the effects of different management strategies aimed at the achievement of different management goals. The results of a long-term research could be used to adapt the existing objectives and demonstration plots could be an important instrument of lifelong learning using practical examples in the field.

Visibility and Communication of the forestry sector is an issue that needs action. As it was presented in the introductory chapter, almost all countries (except Serbia and North Macedonia) have a forest cover ratio that is higher than 40%, and having this in mind, foresters need to be more proactive in communication and publicly more visible. Therefore, there is a need for a clear communication strategy of the forest sector in WB countries.

Chapter X. Conclusions

Forests and forestry in the WB countries face many similar challenges. They also have their own problems that do not exist in other countries in the WB (FBiH do not have a Forests law, while other countries do not face such a challenge). Forestry strategies are missing or need to be updated in most WB countries (they should respond to new challenging issues like climate change, bio-economy, forest biodiversity, different forest risks). The monitoring of strategic objectives should be conducted on a regular basis against clear indicators of success.

The legislative framework should be adaptable and needs to be created as the main legislative instrument for achieving strategic objectives. For the improvement of SFM there is of course a need for financial resources. Those resources are available in all countries in a certain amount, and sometimes they are insufficient or unevenly distributed. Only in Albania, IPARD funds are available for the forestry sector. The provision of stable and continuous financing of forestry activities is the precondition for fulfilling the ecological, economic and social functions of the forestry sector. One of the tasks of competent national institutions is to secure funds from national and international sources. Countries in the region should create stable funds that will compensate for all positive externalities that forests provide for the society. The creation of some sort of payment for the ecosystem services approach could be a good starting point for future investment and incentives in the forest sector. Such financial mechanisms became available in Serbia after the adoption of the Forest Law in 2010, but they were abolished after a few years.

The forest road network in WB countries is insufficient, and there is a need to improve the planning system of the forest infrastructure (primary and secondary road network) including a proper maintenance of the existing forest road network. Well educated and equipped people for forest infrastructure are a precondition for the implementation of SFM.

Biodiversity conservation is one of the main tasks of the forestry sector, and it is not implemented within the process of forest management planning. A methodology should be created for assessing the biodiversity status and established monitoring system that could provide clear indicators on the

biodiversity status after the implementation of forest management strategies. In addition to this, the process of establishing the NATURA 2000 network is in progress in some WB countries. In some WB countries (Serbia) the driving force for implementing Natura 2000 sites is the nature protection sector and forestry plays a minor role, although most of the Natura 2000 sites are on forest land.

The management of private forests is seen as a challenge due to the existence of issues related to the urbanization of private forest owners, unresolved property-legal relations, usurpation, a large number of private forest owners and fragmented ownership. Sustainable mobilization of wood from private forest owners is essential for SFM in this ownership category. Comprehensive lifelong education of private forest owners could lead to sustainable forest management on large areas in WB countries. Creating tailor-made forest policy instruments for small scale forest owners will be a significant contribution to the sustainable forest management of small-scale forests in the WB region.

The potentials for afforestation or other nature-based solutions are not systematically established at the national or regional level as well as at the operational level. The development of a monitoring system for land use change and creation of an afforestation strategy at the national and regional levels should be the focus of future actions as a contribution of the forest sector to climate change mitigation and adaptation goals.

A forest information system has to be created in all WB countries. The forest information system could be used as the main instrument for the monitoring and implementation of sustainable forest management. The system could be used in combination with remote sensing data. Possible threats could be focused on in a module on early warning systems for forest fires.

The lack of appropriate inter-sectoral and cross-sectoral cooperation leads to a slower fulfilment of the tasks set up in the strategic documents of different sectors and intensifying conflicts between different stakeholders. Regional cooperation should be established in order to create a forest exchange platform. The exchange of best practices from the region on different topics will be of value in order that other countries could benefit from the experience of problems faced during the process of implementation.

Continuous education as the instrument of implementation of new elements in forest management planning is at the development stage. A long-term continuous education strategy, including institutional set up, is one of the main instruments for securing sustainable forest management in the future. The organizational set up for vocational training and knowledge transfer is of essential interest in the forestry sector of the whole WB region. Long term research and demonstration plots could play an important role as practical education and monitoring instruments in the future.

Chapter XI. Recommendations

This regional report is based on data taken from national reports (see annex 1 National reports) that have a predefined structure aiming to describe the situation of sustainable forest management in all WB countries/territories. The national reports were produced by national experts from all WB countries/territories in close cooperation and consultation with national decision makers. National experts and decision makers established solid cooperation and mutual understanding by working together on the preparation of this regional report and during several stakeholder meetings. Regional cooperation could be created regarding exchange of experience from the implementation of different aspects towards SFM among WB countries and potential partners from EU. A best practice exchange platform among the countries in the WB region with more advanced experience from some EU countries on some of the selected topics could be used as an option for them to avoid some bottlenecks and see positive effects from other countries towards achieving SFM. Because of that, all data presented in this report could be used as a starting point for the selection of common topics for potential cooperation and strengthening the forestry network among WB countries/territories in the future. Common topics listed above were selected by the majority of WB countries (see annex 2) and could be considered as priority topics that could be addressed in future cooperation in the WB region. Out of a long list of common topics, the following: Close to Nature Forest Management, Forest biodiversity assessment and monitoring in forest management planning and the EUTR regulation in WB countries, could be seen as topics that could be further elaborated on and potentially prepared in the form of project proposal for future common implementation. A potential extension of this project could be used for creating a working group of WB partners and potential institutions from EU which have experience in the implementation of EUTR procedures, CNFM and forest biodiversity assessment and monitoring. A series of common project working group (WB members and EU partners) workshops and presentations (demonstration) of experience in the implementation of selected topics could be used for creating a common understanding of the selected topics and their potential preparation for implementation adjusted to national forest sector peculiarities. During a one-year extension period, the project working group should prepare a draft project outline for the implementation of selected topics in the form of 2 to 3 year project after the extension period is over. This period of implementation of the selected topic (2-3 years) should be used in parallel for strengthening and potentially for creating future outlines for a vocational and lifelong learning platform at the national level, which should secure a fast and solid knowledge transfer of new elements and procedures from policy to practice. The experience and regional context of SWG as an organization should be used for facilitation and creating the best practice exchange platform among WB partners.

Close to Nature Forest Management (CNFM) could be used as the leading concept in achieving SFM in the region. Management guidelines related to forest management (praxis oriented), which describe interventions in the forest from the beginning to the end of the production period could be used as one of the instruments for the implementation of CNFM on the ground. Management guidelines support the creation of resilient and vital forest ecosystems by promoting natural regeneration, forest mixture, uneven structures, clear management targets, integrated pest management by guiding forestry praxis in the achievement of these objectives through using clear and numerical management instructions. The management strategy should take into consideration the climate change issue, and an optimal management strategy produces wood assortments with long term carbon storage effects. Forest site mapping and forest function mapping could be seen as important elements in the selection of suitable tree species in future climate change scenarios. The project working group should prepare information regarding how far WB countries are in implementation of CNFM where all WB partners could see practical implementation in the field on demonstration plots in order to get more practical information and better understand the approach and content used for the implementation.

Forest biodiversity assessment and monitoring within forest management planning are essential elements for the protection and improvement of forest biodiversity aspects in SFM. While most WB countries do not have a methodology for biodiversity assessment and monitoring, the project working group should provide experience from the region and practical examples from the EU partner institutions regarding data collection and biodiversity assessment. The aspect of Biodiversity is part of the EU forest and EU biodiversity strategies as well as the WB green deal. Practical implementation of elements stipulated in these strategic documents could be beneficial for all WB countries in terms of the EU integration process.

The EUTR regulation should contribute to the achievement of SFM in each WB country. This regulation is defined at the EU level and affects all activities related to timber trade and transport in the EU countries. Illegal transport and trade in wood and wood products, should be minimized by traceability and by creating a transparent wood flow on the market. The highest discrepancy can be seen in the control of this process, having in mind that although forests are managed according to the SFM principles, illegal transport and trade annuls all efforts of foresters. The creation of a sustainable organizational set up for introducing the EUTR procedure should be a contribution on timber trade in terms of legality on the national and international markets and in the same time contribution to SFM in WB region. The project working group should prepare information regarding how far WB countries got in the implementation of EUTR. The presentation or demonstration of EUTR implementation should be organized in the region where this implementation is the most advanced. The experience of some EU countries would be of great importance for WB countries, since they could see the practical set up and working process in place, while potential implementation in the WB region could be beneficial for all parties.

Western Balkan countries should participate in the regional initiatives related to SFM through different umbrella initiatives (WB green deal, Open Balkan, different EU cooperation mechanisms) and develop regional cooperation and networking. Once the network is established, the preparation of regional projects could be a good starting point for further cooperation and securing sustainability of WB forest network. The countries should further define the priorities for the region and discuss possible funding schemes for the implementation of the selected projects from national or international funding schemes. This project and potential extension with 2-3 years implementation phase should contribute towards creating and strengthening regional forest network and their future cooperation aiming to support SFM at national and regional level.

SUSTAINABLE FOREST MANAGEMENT IN ALBANIA

National Report

National Expert:

Prof. Leonidha Peri

Chapter I. Abbreviations

AAC	Allowable Annual Cut
AFP	Albania Forestry Project
ALFIS	Albanian Forest Information System
ANFI	Albanian National Forest Inventory
BioCF	BioCarbon Fund
EFFIS	European Forest Fire Information System
FSS	Financial sustainability scorecard
INRMP	Improved Natural Resources Management Project
INSTAT	Institute for Statistics of Albania
METT	Management effectiveness training tools
MTE	The Ministry of Tourism and Environment
NAPA	National Agency of Protected Areas
NFA	National Forest Agency
NITP	National Inspectorate for Territorial Protection
NPs	National Parks
NRDP	Natural Resources Development Project
Pas	Protected Areas
PDO	Project Development Objective
WB	World Bank

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Chapter V. Introduction

In the last 60 years forest resources in Albania have been under a great pressure. A considerable loss not only in area and standing volume already took place during the communist regime period, mainly because of the government decisions at that time to clear up forest areas in favor of expanding the arable land area and overusing these resources.

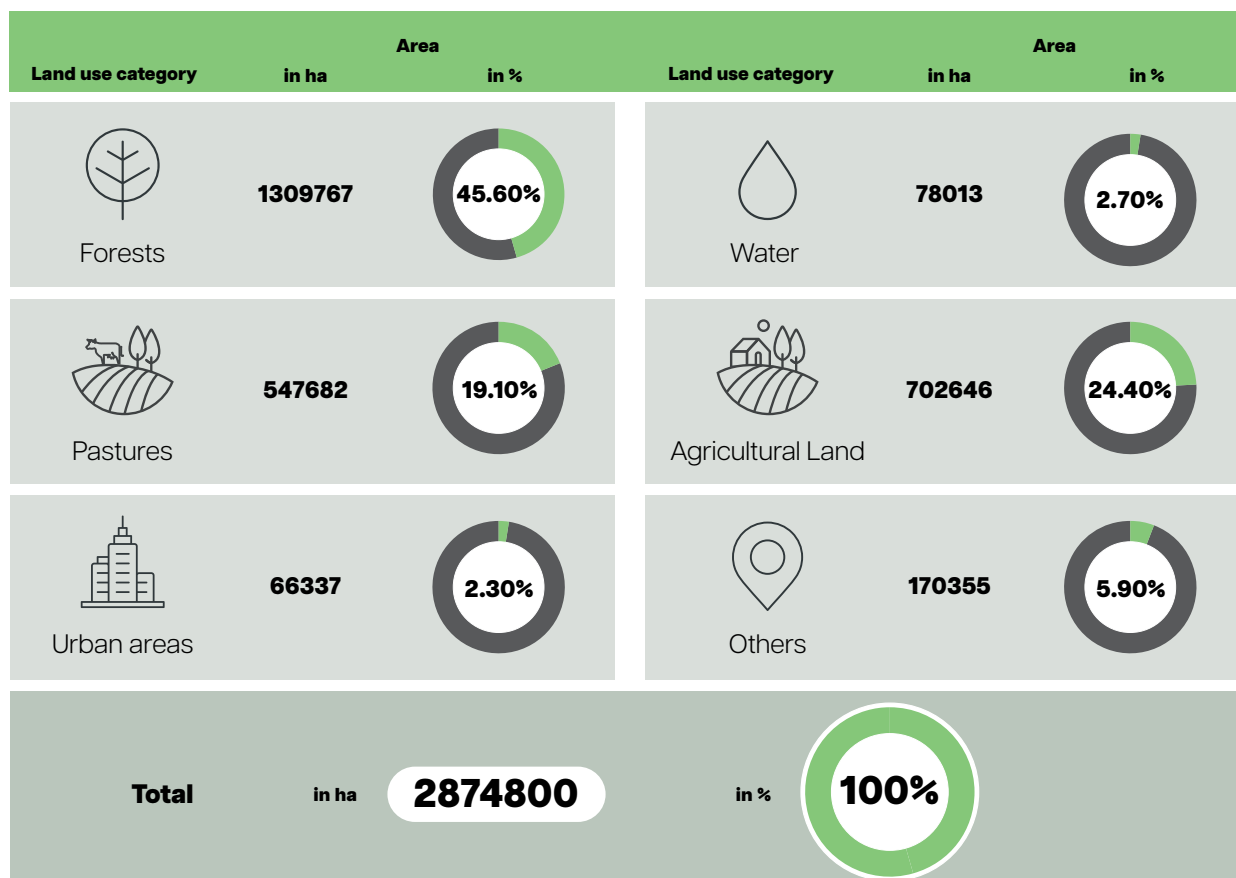
In 1991, Albania started a transition process from a centralized communist system to a free-market economy system. The forest sector has suffered much more from the transition than the other sectors.

All the Albanian governments of the last 25 years have undertaken several reforms in the forest sector with a strong focus on the decentralization processes. Decentralization reforms in the forest sector are seen today as a policy option to tackle the unsustainable management of natural resources including forest resources. Policies fostering devolution processes in forestry sector follow mainly three objectives: (i) *empowering local "forest communities" to sustainably manage the forests*, (ii) *improve the condition of the degraded forest areas* and (iii) *reducing/alleviating the poverty of these communities*.

Data and facts on Forests in Albania

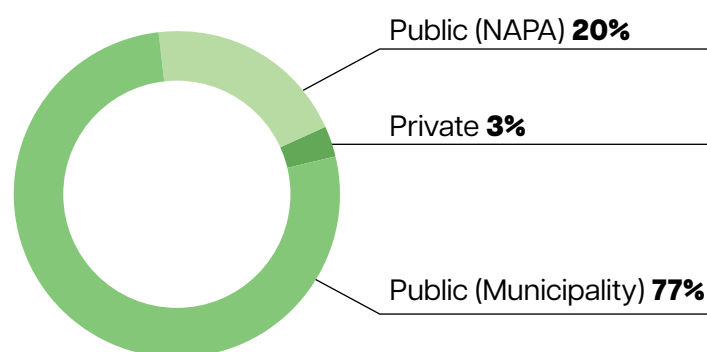
According to ANFI 2018, 45,6% of Albania, i.e., an area of approx. 1,31 million ha is covered with forests (Table 1). Forests (46,5%) and pastures, in total, cover c.a. 65% of the country area, or c.a. 0.65 ha/capita. Forests and wooded land in EU achieve 0.36 ha/capita.

Table 1. Distribution by land cover classes (LCCS3-FAO)



The forest resources are mainly state/public owned, only 3% of the forest area is under private ownership.

Figure 1. Forest ownership structure in Albania



Publicly owned forest land in Albania is predominant (Figure 1), with a minor share of private forests, which according to INSTAT (2014) has been stable at 28,780 ha (3%). The publicly owned forests are managed mainly (77%) by municipalities, except for forests within protected areas (20%) that are managed by the National Agency for Protected Areas.

Based on the silvicultural system, the forest area distribution is as presented in table 2, showing that coppice (32%) and high forests (23%) dominate.

The standing volume is estimated at about 58 million m³. Although high forests cover about 33% of the forest area, they have about 73% of the standing volume of timber. This figure must be taken into consideration during the decision-making processes of the preparation of a national forest program and strategy.

Table 2. Comparative distribution of forest area and standing volume by silvicultural system
(based only on accessible areas)

Silvicultural system	Area		Standing Volume	
	(000 ha)	%	(Million m ³)	%
High Forests	388	32.4%	42.4	73.4%
Coppice	553	46.2%	10.0	17.4%
Shrubs	256	21.4%	5.3	9.2%
Total	1197	100.0%	57.7	100.0%

The distribution of the Albanian forests (in area and volume) per group species composition (coniferous and broadleaves) is given in the table 3:

Table 3. Comparative distribution of forest area and standing volume by vegetation types
(based only on accessible areas)

By vegetation types	Area		Standing Volume	
	(000 ha)	%	(000 ha)	%
Coniferous forests	135	11.3%	11.5	21.7%
Coniferous-dominated mixed forests	49	4.1%	3.9	7.3%
Broadleaved forests	956	79.9%	38.4	63.7%
Broadleaved-dominated mixed forests	57	4.8%	4.0	7.3%
Total	1197	100.0%	57.7	100.0%

In terms of sustainable forest management reporting and monitoring the classification of forests (per area and volume) in forest types (MCPEF) is very important. In the table 4 is presented the distribution of the forest area and standing volume per forest type (Forest Europe).

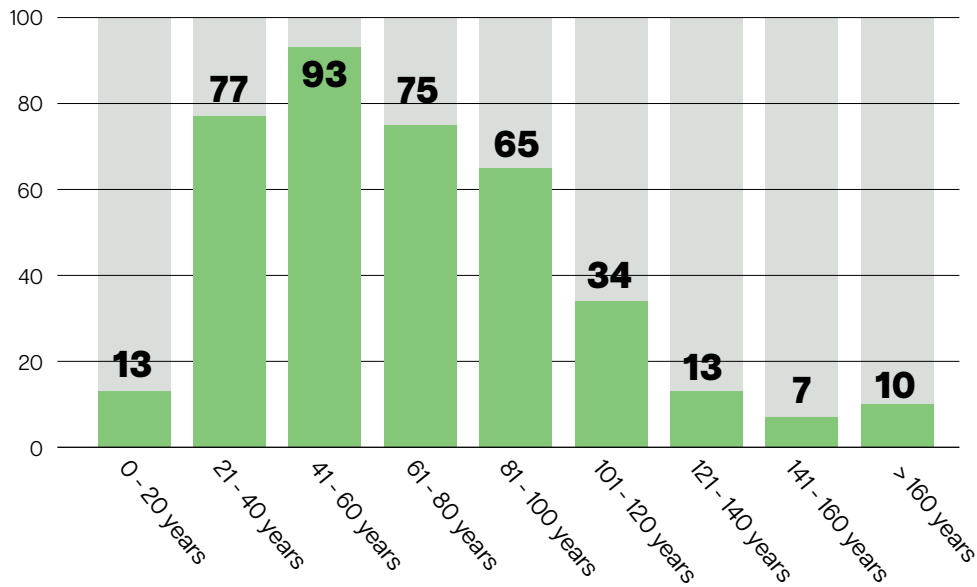
15% of the forest area is covered by beech forests, which have c.a. 40% of the standing volume (c.a. 23 million m³) and 14% of the forest area covered by coniferous forests, which have c.a. 24% of the standing volume (c.a. 15 million m³). The main coniferous species are black pine and silver fir.

Table 4. Distribution of forest area per forest types

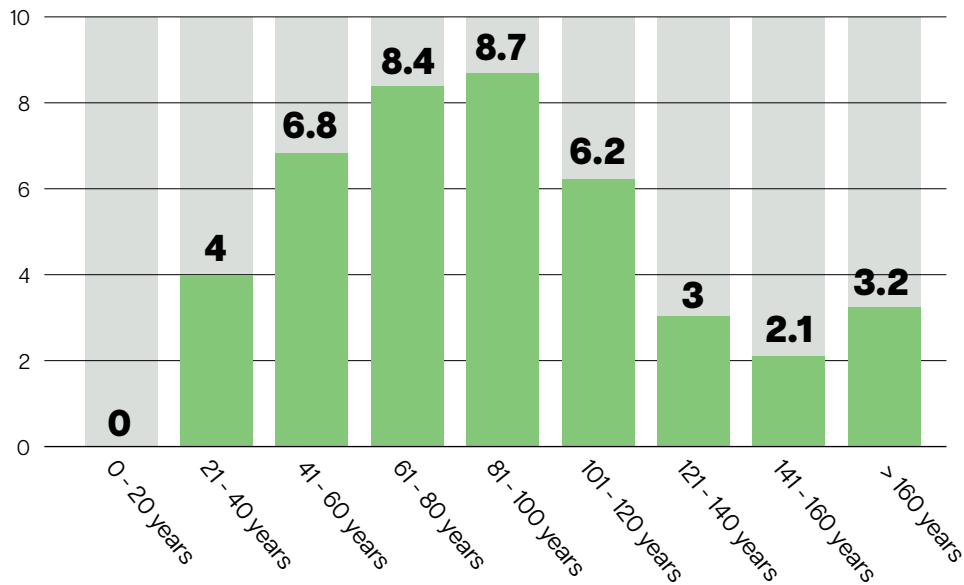
Forest type	Surface (/000ha)	%
Subalpine and mountainous spruce and mountainous mixed spruce-silver fir forest	3.7	0.3
Alpine scots pine and black pine and Balkan pine forest	17.0	1.4
Sessile oak-hornbeam forest	157.6	13.2
Other mesophytic deciduous forests, birch, aspen, goat willow, European hop-hornbeam	81.7	6.8
Illyrian mountainous beech forest (IMB)	124.7	10.4
Moesian mountainous beech forest	63.7	5.3
Thermophilus deciduous forests. Turkey oak, Hungarian oak, and Sessile oak forest	276.0	23.1
Other thermophilus deciduous forests, fraxinus, carpinus etc.	134.3	11.2
Mediterranean evergreen oak forest, holm and valonia oaks	57.8	4.8
Other sclerophyllous forests (lauriphyllous vegetation)	95.0	7.9
Mediterranean pine forest	27.6	2.3
Mediterranean and Anatolian black pine forest	87.0	7.3
Mediterranean and Anatolian fir forest	13.3	1.1
Juniper sp forest	29.2	2.4
Riparian forest, common alder, white poplar, white willow, narrow leaved ash	11.1	1.0
Fluvial forest, oriental plane, common elm, small-flowered tamarisk	4.8	0.4
Plantations of site-native species	11.1	1.0
Plantations of not-site-native species and self-sown exotic forest	1.6	0.1
Total	1197.3	100

Very interesting to analyze is the distribution of the forest area and the standing volume per **age class** and silvicultural systems (Graph 1, 2, 3, 4).

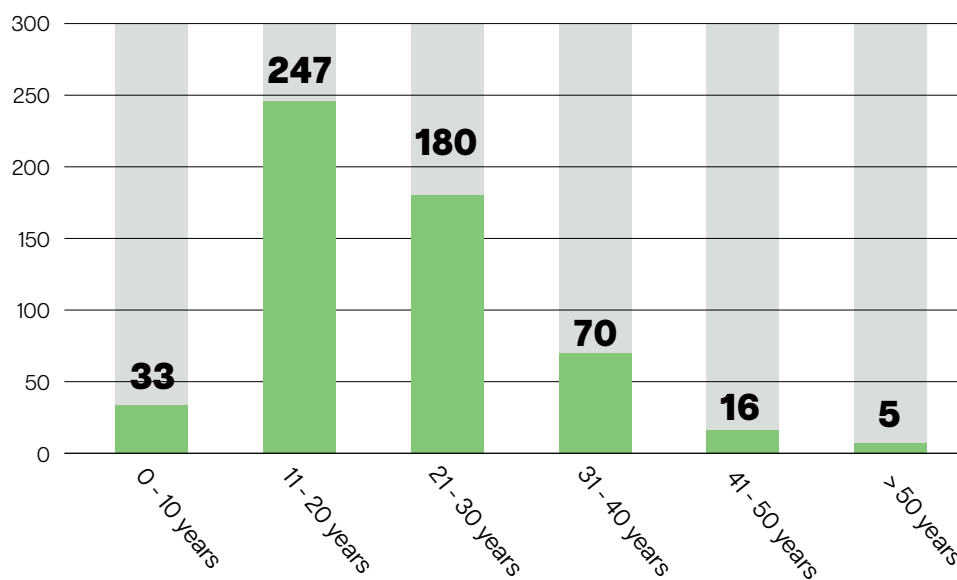
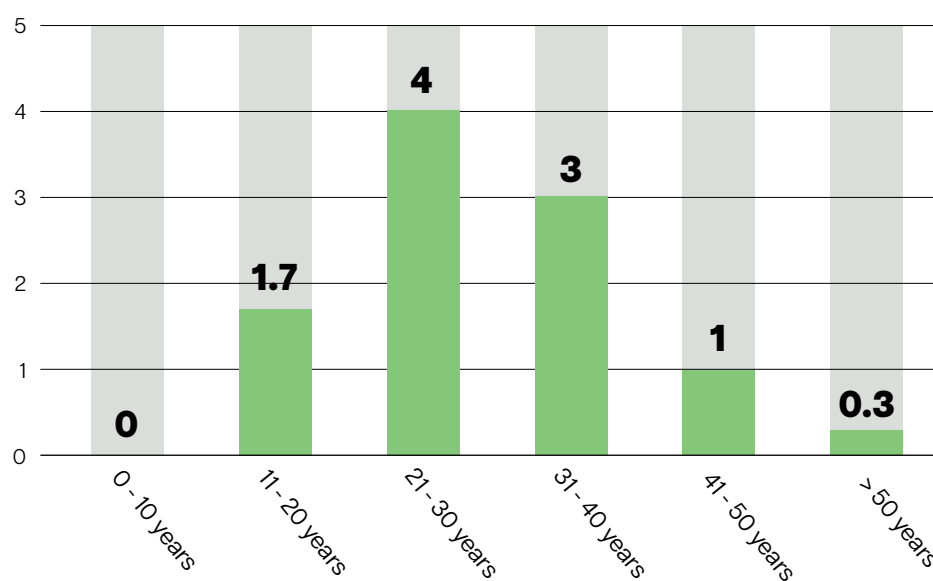
Graph 1. Distribution of High Forest Area by Age Classes (/000 ha)



Graph 2. Distribution of High Forest Standing volume by Age Classes (million m³)



From the total area of c.a. 553.000 ha coppice forests, 96% are younger than 40 years and only 4% are mature coppice forests. From the total area of ca 256.300 ha shrub forests, 88% are younger than 20 years and only 12% are mature shrubs forests.

Graph 3. Distribution of Coppice Forest Area by Age Classes (/000 ha)**Graph 4. Distribution of Coppice Forest Standing volume by Age Classes (million m³)**

The above figures clearly show that:

(i) Albanian forests have an uneven structure of area and standing volume per age classes, dominated by young forests. More than 2/3 of the area and 50% of the standing volume of high forest younger than 80 years old, and nearly all the coppice forest younger than 40 years old, represents an important challenge for the future of the sustainable management of the Albanian forests.

(ii) Albania is a rich country in forest area and forest cover, but doesn't have much standing volume to harvest in the short- and mid-term future.

The annual increment in the standing volume, in total and per ha, as well as the mean volume per ha and annual allowable cut (AAC) are important variables for SFM, which are provided by ANFI 2018. On the tables below (5, 6, 7) these variables are presented per forest silvicultural systems and age classes structure:

Table 5. Distribution of area, standing volume, mean increment and mean standing volume per ha per age classes of high forests

Age Classes (In years)	Area (/000 ha)	Standing Volume (Million m ³)	Mean increment in volume (/000 m ³)	Mean standing volume (m ³ /ha)
0 - 20	13	0	4	3,3
21 - 40	77	4,0	132	51,3
41 - 60	93	6,8	136	73,4
61 - 80	75	8,4	121	112,8
81 - 100	65	8,7	97	133,0
101 - 120	34	6,2	56	179,6
121 - 140	13	3,0	23	238,7
141 - 160	7	2,1	14	277,2
> 160	10	3,2	20	314,8
Total	388	42,4	603	109,3

Table 6. Distribution of area, standing volume, mean increment and mean standing volume per ha per age classes of coppice forests

Age Classes (In years)	Area (/000 ha)	Standing Volume (Million m ³)	Mean increment in volume (/000 m ³)	Mean standing volume (m ³ /ha)
0 - 10	33.4	0.00	8700.4	1.3
11 -20	247.	1.7	112223.0	6.8
21 -30	180.4	4.0	160051.2	22.2
31 - 40	70.1	3.0	86520.1	43.2
41 - 50	16.5	1.0	22553.2	61.7
>50	5.3	0.3	5218.6	49.2
Total	553	10.0	395266.5	18.1

Table 7. Annual allowable cut by silvicultural system

Silvicultural System	AAC Calculation	
	Silvicultural Method (m ³)	Cameralist Method (m ³)
High Forests	723398.4	514497
Coppices	215201.4	245945
Shrubs	150330.4	400881
Annual harvesting possibility	1088930.2	1161323
In % of the standing volume increment	80%	85%

In terms of sustainable forest management reporting and monitoring, the classification of forests (per area and volume) into forest types (MCPEF) is very important. Forest area and standing volume distribution per vegetation type (Forest Europe) are presented in table 8.

In terms of biodiversity and the range of biodiversity indicators, the naturalness of the Albanian forests is an important aspect. Historically, because of the lack of financial resources in the forest sector, from a silvicultural aspect, 85% of the harvested forest area is naturally regenerated.

Table 8. Naturalness of Albanian forests

Naturalness	Forest Area		Standing Volume	
	/000 ha	%	mln. m ³	%
Natural	564	47.1	37.7	65.4
Artificial regeneration by seeds or seedlings under the stand	2	0.1	0.2	0.3
Artificial regeneration (afforestation)	43	3.6	4.0	6.9
Sprouting (coppice)	576	48.1	15.3	26.5
Others	12	1.0	0.5	0.9
Total	1197	100	57.7	100

Accurate estimates of carbon in forests are crucial for forest carbon management, carbon credit trading and national reporting of greenhouse gas inventories, all of which are topics related to SFM contribution in mitigating climate change impacts. The carbon sequestered by the Albanian forests is presented in table 10.

According to ANFI 2018, the total forest biomass amounts to nearly 40 million tonnes and the carbon stocking in biomass amounted to 19 million t C eq.

Table 9. Carbon sequestration from the Albanian forests and pastures

Management form	Area (/000 ha)	Area (%)	Volume (m ³)	Bt = 0.729*V-3.3 (t); Bc = 0.569*V + 7.9 (t)	Ton C	Ton CO ₂	Soil carb. (ton/ha)	Soil carbon	Total
Broadleaved High forests	235	13.8	27475582	20029696	10014848	36654344	75.48	17745348	27760196
Coniferous High forests	153	9.0	14925358	10880583	5440291	19911466	13.87	2119905	7560196
Coppices	553	34.4	10032155	5708304	2854152	10446196	75.48	41739610	44593762
Shrubs	256	13.0	5297436	3014249	1507124	5516075	65.13	16694643	18201767
Rangeland	31	2.2	77555	44137	22068	80770	10.5	323201	345269
Summer pasture	439	26.2	164587	119981	59990	219565	5.0	2194445	2254435
Winter pasture	37	1.4	49263	28039	14019	51311	5.0	183090	197109
Total	1704	100	58021936	39824987	19912494	72879727		81000241	100912734

Chapter VI. Strategic and legal framework in the Country

Main forestry sector strategic document

"ON THE POLICIES OF THE FOREST SECTOR IN ALBANIA - 2030" is the main forest sector policy document. The document is drafted "... referring to the vital importance of forests and considering the poor situation in which forests are, within the framework of an increased attention to this sector by the Albanian government.

The logical structure of this document follows through the analysis of the existing situation, the philosophy of the sector's governance, the long-term goals, the main directions of the policies, the measures for the implementation of the policies, their priorities and feasibility, and an implementation and monitoring plan. The strategic document was approved by the Albanian Government on 28.12.2018.

The main aim to strive towards is a "... Sustainable contribution of forests to a better life for society today and future generations". The Mission of the sector is to "... restore the balances in the Forest Ecosystems" and the Vision is an "... all-green shelter, a sustainable resource, a living organism and an invaluable capital".

The document identifies 4 priority issues as follows: (i) Clear and complete regulation of actors' rights and obligations; (ii) Functional reorganization of the sector (from the ministry to local communities); (iii) Balancing the use of forests for energy and industry; (iv) Protection of forests (from fire, illegal logging, and natural pests).

The 4 priority issues are addressing the entire sphere of forest governance, from the state of forests, the forest service, to management of use, to the system of functional organization, to financial and legal administration, and development of the sector. The main long-term goals to be achieved by 2030 are:

1. Strategic Goal: "Good Administration"

Restoring the positive trend in forests, aiming at an increase in the total standing volume of the forest fund of about 11 million m³, or about 20% more than the actual standing total volume

2. Strategic Goal: "Functional Organization"

Establishing, putting into operation, and strengthening an efficient and effective institutional organizational system, which operates according to the best standards and practices, and with modern infrastructure, technology, and innovation

3. Strategic Goal: "Sustainable Use"

Use of forest resources in a sustainable way and in support of the development of the country, optimizing its use and value, balancing the different uses to the maximum values, without harming the continuity of life and the cycle of the forest, for the future generations.

4. Strategic Goal: "Qualitative Care"

Qualitative and integrated care of forests, at the right time and place, aiming at a rapid growth, protection, improvement, regeneration of the current forest area, and the restoration of all burned or damaged forest area in recent years.

To achieve the 4 strategic goals, 12 policy statements are formulated (three for each of the strategic goals), which can be seen as a definite course of action. For each of the 12 political directions, specific measures have been defined, which address the current situation in Albania and adapt to the economic reality of the country, where there are a total of 40 measures.

Legal Provisions

- *The Albanian Constitution*. in Chapter V/Social Objectives, Article 59/dh, prescribes the principle of sustainable governance for the use of natural resources, including forest resources, namely: "*rational use of forests, waters, pastures and other natural resources on the basis of the principle of sustainable development*".
- *Law No. 57/2020, date 30.04.2020 "On Forests"*. The purpose of this law is the protection of forests as assets of special importance, for their great and irreplaceable values in the protection of the climate, the soil, the preservation and improvement of the productive potentials and balances of the natural environment, biodiversity, genetic resources, and the water regime, as obligations of national and international interest.

The law should contribute: "*to the sustainable development of the forest sector, which enables a better life for society today and future generations, by regulating relations in the forest sector, which have a significant impact on the quality of the natural environment, on the development of agriculture, of energy and tourism, in the reduction of poverty, the displacement of the population, the mitigation of conflicts and inequalities based on social and gender, as well as in the security of the country*".

The law aims: "*to preserve, increase the forest area and increase the total standing volume of the national forest fund, regulate relations, and guarantee financial sustainability, functional organization at all levels of government, sustainable and balanced use of forest resources, without compromising the continuity of life and the cycle of the forest*".

The object of this law includes: "*the regulation of the administration of the forest sector, the institutional organization, the regulation of benefits and services to it, based on the principle of sustainable development and international commitments to which the Republic of Albania is a party, to guarantee the continued fulfilment of environmental, economic, social and cultural functions in the interest of the*

whole society”.

- *Law No. 5/2016, February 4, 2016 “For the declaration of the moratorium in the forests in the RoA.* The purpose of this law is to reduce interventions on the forest fund, which is reduced because of overexploitation and other damage, and aims towards improving and restoring its condition. The duration of the moratorium is 10 (ten) years from the date of the entry of law into force.

The object of this law is the ban of commercial harvesting activities in the public/private forest fund throughout the territory of the Republic of Albania, the trading of harvested timber products, the ban of the export of raw timber, timber construction material, firewood, as well as wood charcoal.

- *Law No. 81/2017, date 04.05.2017 “On protected areas”.* More than 80% of the protected areas network includes forest areas with a protective status.

The purpose of this law is: “to ensure special protection of the protected environmental areas and the important components of biodiversity and nature in them, ...”.

The object of the law is: “the announcement, preservation, administration, management, *sustainable use* of protected areas of environment and their natural and biological resources, *based on the principle of sustainable development*, to guarantee the fulfilment of environmental, economic, social and cultural functions, in the interest of the whole society, as well as determining the responsibilities of public institutions and private natural/legal persons for their preservation and sustainable administration...”.

- *Law No. 13/2015 “For local self-government”.* This law regulates the organization and functioning of local government units in the Republic of Albania and defines their functions, competencies, rights, and duties of the relevant bodies. In the chapter VII, Article 27 is stated that municipalities are responsible for administration of forests and pastures, respecting the existing legal framework for forests.
- *Law No. 10431, date 09.06.2011 “On the environment protection” (amended).* This law aims: “to protect the environment at a high level, preserve and improve it, prevent and reduce risks to human life and health, ensure and improve the quality of life, for the benefit of present and future generations, as well as ensuring the conditions for sustainable development of the country”.

This law defines the principles, requirements, responsibilities, rules and general procedures for guaranteeing a high level of protection of the environment in the Republic of Albania, including forests.

Other laws whose dispositions set up rules for and regulate forestry related activities in Albania, include:

- *Law No.10253, date 11.03.2010 “On hunting”*
- *Law No. 61/2016, date 02.06.2016 “For the declaration the moratorium on hunting in the RoA”*
- *Law No. 10006, date 23.10.2008 “On the protection of wild fauna” (amended).*
- *Law No. 10120, date 23.04.2009 “On the protection of natural medicinal and oil-etheric plants” (amended)*
- *Law No. 9867, date 31.01.2008 “On regulations and procedures for international trade of endangered wild flora and fauna”.*
- *Law No. 9587, date 20.07.2006, “On biodiversity protection” (amended)*

Chapter VII. Institutional framework in the Country

In 1996, the process of transferring small forest areas usage rights to the local communities began, led by the General Directorate of Forest and Pastures with technical and financial assistance of international organizations (WB). The goal of the decentralization reform in the forest sector was to prevent degradation and develop forest and pastures through participation of communities, increase the benefits to communities and villages from the management of these resources.

The transfer of user rights was also based on the tradition of the communities, using the forest resources, on customary law making and on using and protecting the forests according to the Canon of Lekë Dukagjini.

The transfer of forest management to communities is conceived as a procedure to increase the awareness and responsibility among local actors. Forest policy and management are now shaped by a much broader set of actors than in the past, not only the policy makers and administrative staff, but also private forest owners, industry, and different NGO-s. The aim of the reform was the establishment of a policy framework that effectively balances the economic, ecological, and social functions of natural resources.

In 2008 the transfer of forests was formally completed in the most of communes of Albania, transferring the property rights on forest areas from the central governments to local government units (communal/villages), making it one of the most important reforms in forestry sector. With a final decision in February 2014, the Albanian government transferred the forest areas property rights to the local government units (municipalities).

With the 2016 administrative reform, all the forest area transferred to the communes became property of the new established 61 municipalities, completely changing the ownership structure in the forestry sector in Albania. This radical change in the ownership structure of forest resources practically dismantled the existing, strongly centralized, governance system of the forest sector. What is left is local government units and rural communities lacking capacities and resources to sustainably manage forest resources they own or use.

Now, the future success of communal forestry would depend on the ability of the communities/ municipalities to manage forest resources in a sustainable way.

As a landscape that includes many other stakeholders apart from forest resource owners, the main challenge of the Albanian forest sector is the establishing of a new governance system.

The new governance system should be based on shared power and management between local self-government units and local community users, including other important stakeholders and having more than one level of governance. A system with the above-mentioned characteristics is a polycentric one with multiple centers of authority.

The Central Institutions responsible for the forests

The Ministry of Tourism and Environment is the highest policy-making and regulatory institution, which guarantees the sustainable development of the sector, coordinating the partnership with other sectors and actors and balancing sectoral interests.

The MTE structure responsible for the forests (Forest and Pasture Sector under the Directorate of Environment Development Programmes) has the following responsibilities:

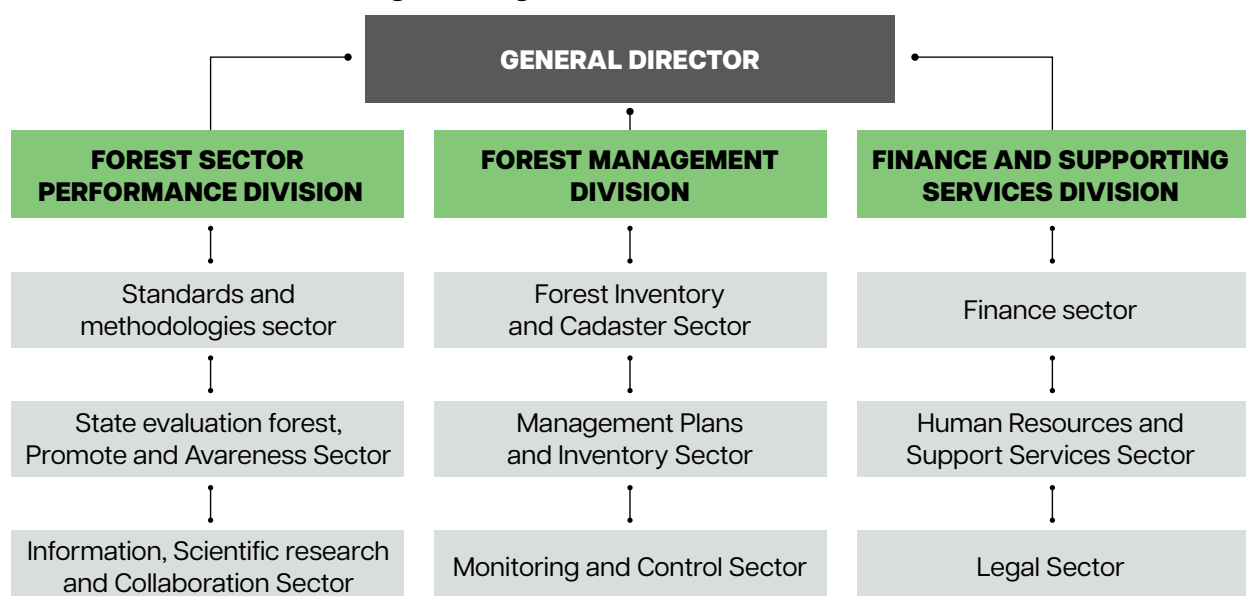
- a) determines policy directions for forests, guaranteeing harmonization with national priorities and other sectoral policies;
- b) designs and monitors the implementation of programs and strategic documents for the development, preservation and administration of the national forest fund;
- c) designs and improves the legal regulatory framework in the field of forests, monitors its implementation and effectiveness, as well as the fulfilment of obligations arising from international agreements on forests;
- d) plans the financing of the sector based on the approved policies and priorities
- e) approve breeding plans for all forms of ownership;
- f) certifies experts for exercising professional activity in forests and pastures;

The National Forestry Agency is a legal, public, budgetary entity, subordinate to the Minister of Tourism and Environment, whose mission is the good governance of forests at the national level, their preservation and development, *the sustainable and multifunctional use of resources* in the forest fund national, as a natural asset of national importance.

NFA has the following responsibilities:

- a) ensuring performance in the forestry sector, assessing the condition of forests and the impact of the sector through monitoring key indicators and the level of policy implementation, programs and plans at the national level;
- b) the protection and sustainable use of forest resources through the optimization of their use towards economic profitability;
- c) setting up of the norms, standards, and unified best practices in the field of forests;
- d) implementation of internationally accepted forest certification systems;
- e) guaranteeing the coordination, cooperation and commitment of the structures responsible for forests, at the central and local level, as well as other actors;
- f) establishment and functioning of the ALFIS;
- g) supervision of the implementation of legal requirements and planning documents in forests;
- h) guaranteeing the functionality of the control and inspection system of the activities that take place in the national forest fund;

Figure 2. Organizational Structure of NFA



Soon, NFA is going to establish its local structures in 4 regions of the country. As for now only the NFA Central Office is operational.

The National Agency of Protected Areas is the central state institution responsible for protected areas, under the Ministry of Tourism and Environment, according to the special legislation for protected areas.

Protected Areas Network (PAs) occupies an area of 523,831 ha, representing 18.2% of the country land area and 20.1% of the forest and pasture fund.

The National Agency of Protected Areas has a staff of 274 people, of which 20 in the central office and 254 in the twelve regional administrations of protected areas.

National Inspectorate for Territorial Protection

The mission of this inspectorate is to control and protect the territory and the environment from illegal constructions and developments or in violation of the conditions of permits, guaranteeing a stable and safe development in the field of development, planning, protection of the territory, discipline of works in construction, construction products, as well as in the field of integrated management of water resources

Local structures responsible for forests

The municipal structure responsible for the governance of forests is a specialized structure at the local level, with management, control/inspection, technical and advisory attributes, which administers the national forest fund in ownership, as well as issues/suspends/revokes permits for the exercise of the activities for the use of the national forest fund for the interested subjects.

The structure responsible for forests in the municipality has the following tasks:

- a) is responsible for the overall administration of the national forest fund, public and private, within the administrative boundaries of the municipality;
- b) establishes and maintains the register of the national forest fund in the municipality.
- c) designs, approves, implements, and controls the progress according to operational plans
- d) prepares projects for investments in forests, controls and takes over the works carried out in forests, regardless of the source of financing, supports and approves the planning and implementation of governance in private forests;
- e) monitors the maintenance and operation of the infrastructure in the public forest fund;
- f) directs and supervises the work for the improvement of eroded areas and the fight against erosion, landslides and avalanches within the territory of the municipality, as well as the fight against pests and diseases;
- g) provides technical support through counselling of private owners and users of public forests and their organizations,
- h) cooperates in the development of research activities in forests and supervises the development of wild flora and fauna and proposes the protection of endangered, rare or endangered species;
- i) cooperates with civil society and organizations set up on a legal basis with "the forest" as their object
- j) controls and conducts inspection processes for the implementation of legal provisions and by-laws in force for forests

Chapter VIII. Description of projects related to Sustainable Forest Management (SFM) in the past 5 years (National and International)

1. Environmental Services Project (2014 – 2021)

The major recent donor intervention in the forest sector was the **Environmental Services Project (ESP)**.

The Project Development Objective (PDO) was to support sustainable land management practices and increase communities' monetary and non-monetary benefits in targeted project areas which are mainly in erosion prone rural upland areas.

The Project particularly focused on enhancing the financial, economic, and institutional sustainability of land use and natural resources management, and will help build capacities of Albanian farmers, community organizations and government institutions to efficiently use EU funding. Components of the projects:

Component 1. Strengthening Institutional Capacity to improve environmental services from integrated landscape management Component

Component 2. Planning and Provision of IPARD-like Grants to improve land management

Component 3. Introducing Payment for Environmental Services Component

Component 4. Supporting Project Implementation

ESP was financially supported by the World Bank which provides EUR 7,693,000; the Swedish Government provides EUR 7,692,000 and the Global Environmental Facility (GEF) EUR 2,215,000. The World Bank is acting as administrator of the provided amount. The Ministry of Tourism and Environment (MTE) has the overall responsibility for the Project. *The project has supported the forestry sector by strengthening institutional capacities, supporting IPARD-like grants to improve land management, and introducing Payment for Environmental Services Schemes.*

The key achievements under the institutional support component include (i) the development of the Document for Strategic Policies in the Forestry Sector, (ii) development of the new law on Forests and (iii) the support to the establishment of the National Forest Agency. Additionally, the project has supported the development of two important management tools like (iv) the National Forest Inventory and the (v) Albanian Forest Information System (ALFIS).

The project is supporting six municipalities to develop new forest and pasture management plans based on specifically developed guidelines approved in 2018. The project has also supported the registration of Forest and Pastures under the ownership of municipalities.

Under the competitive IPARD like grants scheme, the project has strengthened the capacities of ARDA and other technical bodies in grant management (approx. 4,3 million euro). The project has supported two grant calls and has supported in total 124 applications mostly dealing with reforestation of degraded areas, silviculture treatment in forest stands, pasture improvement, etc.

2. "Forests for Local Economic Development"

The four-year project "**Forests for Local Economic Development**" was implemented by CNVP with financial support from the Swedish Development Cooperation through SIDA. The main objective of the project was "Improved decentralized and sustainable Communal Forestry providing increased production, service and income to rural communities." The project activities covered five specific focus areas, including 1) Land tenure and property rights for communal forestry; 2) Structure and functioning of the communal forestry organizations; the FPUAs, and their regional and national Federations; 3) Value chain development for forest products and the related associations and producer groups; 4) Sustainable Forest Management and practices within communal forestry; and 5) Sharing and influencing policy and institutions for communal forestry based on the issues addressed.

The main project partners were Forest Pastures Users' Associations and Communes in selected target areas, Regional Federations of Communal Forests and Pastures, and the National Federation of Communal Forests and Pastures. The project has also cooperated with Albania's Ministry of Environment.

3. Afforestation & Reforestation of Refused Lands in Albania BioCarbon Fund Project (2012 – 2020)

The Project Development Objective (PDO) was to increase carbon sequestration through afforestation and reforestation of highly degraded land in Albania, leading to enhanced sources of livelihood and incomes in poor rural areas, reduced soil degradation and improved water quality and conservation of biodiversity.

This project is based on the following completed World Bank projects: Albania Forestry Project (AFP, P008271), Natural Resources Development Project (NRDP, P082375) and Improved Natural Resources Management Project (INRMP, P120961).

During the early stages of the NRDP, the BioCarbon Fund (BioCF) expressed interest in purchasing emission reductions (ERs) from Albania, resulting in the Afforestation & Reforestation of Refused Lands in Albania Biocarbon Fund Project (Project), that was connected with the NRDP. Additional resources were therefore allocated to 24 of the former communes (that are now part of 12 municipalities) to make investments needed to sequester carbon through assisted natural regeneration on about 6,200 ha.

The implementation activities of the project supported under the NRDP included: (i) protection of land from grazing by fencing, to promote natural seed sources to enable natural regeneration or re-growth; (ii) supplemental planting at 200-500 seedlings per ha to enrich species diversity and to stabilize eroded areas by filling in the gaps where existing regeneration was poor or absent; and (iii) silvicultural works (vegetative cutting to promote growth such as coppicing, cleaning and thinning). The project sites were spread over five regions of Albania, covering ten different districts mainly in the central and northern part of the country, and showed variability in terms of altitude, climate, and soil conditions. The reforestation activities covered communal forestland and pastureland distributed in 24 former communes (117 villages) that were among the poorest in the country.

4. Enhancing financial sustainability of the protected area system in Albania (UNDP 2017-2021)

The project was designed to assist the GoA in reducing existing funding gaps for the system of protected areas, improving the management of individual protected areas, improving cost-efficiencies in individual protected areas, and building the financial management capacities of protected area staff in the NAPA, etc.

The project has two main pillars: (i) build the financial management capacities of the agency responsible for administering the system of protected areas; and (ii) demonstrate the efficacy of different financing strategies in a sub-set of individual protected areas, and the budget amounted to US\$ 8.4 million.

Component 1: Strengthening NAPA to effectively plan, secure and administer funds for the protected area system. The main outcome of this component is the development of a national planning framework for the protected area system, through increased financial management capabilities of the NAPA and mobilization of funding at the protected area system level from different financial strategies in a sub-set of individual protected areas.

Component 2: Improve revenue streams in individual protected area with the main focus on three National Parks: (i) Dajti Mountain National Park; (ii) Divjakë-Karavasta National Park; and (iii) **Llogara-Karaburun** Protected Area complex.

Achievements:

- Developed National Planning Framework by providing (i) an overarching medium-term Strategic Plan for the institutional development of the NAPA, and (ii) a medium-term financial plan for the protected area system
- Conducted baseline assessments for the current knowledge of the biodiversity, natural and socio-economic values, financial analysis features and its conservation status and trends in all three national parks piloted through the project.
- Finalized business plans for Karaburun-Sazan MPA, Llogara National Park, Divjakë-Karavasta National Park and Dajti National Park.
- Conducted trainings on business planning, financial gap assessment and financial METT with key staff of the NAPA
- Enabled important management support and logistical assistance by supporting all three pilot sites, Dajti NP, Divjake – Karavasta NP, Llogara - Karaburun complex
- Completed study on the potential of introduction of a water conservation levy for Bovilla Reservoir, as a potential Payment for Ecosystem Services mechanism.
- Developed landscape studies, analyses, planning, and design of most prominent landscape facilities, in compliance with conservation & management expectations for Llogara National Park and Dajti National Park.
- Carried out interventions and investments in the targeted PAs for improvement of tourist facilities, such as automatic entry point in Dajti NP, information tables in Llogara and signings, info-kiosks update and upgrade in all three sites, new trails created, etc. A Wildlife Rehabilitation Centre established in Divjake-Karavasta.
- Developed reporting, training, and assessment tools such as METT [management effectiveness training tools], FSS [financial sustainability scorecard] and 10 dedicated training modules) and consolidated in an e-learning platform.

Chapter IX. Implementation of SFM principles in the country in the previous period and subsequent challenges

1. Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles.

According to the national forest inventory of 2018, the area of Albania's forests has decreased by about 50,000 ha compared to the 2004 inventory, and the standing volume per ha has decreased by almost 30 million m³ compared to the 1985 inventory.

Likewise, the standing volume per ha in the high forests has decreased by almost 10%, while in the coppice forests by almost 50% compared to 1985.

The moratorium on forest commercial activities of 2016 has had an impact on the prevention of illegal activities, but its effect is not yet seen in the improvement of the forest surface or the increase in the volume of forest piles.

Albanian forests have an uneven structure of area and standing volume per age classes, dominated by young forests. More than 2/3 of the area and 50% of the standing volume of high forest younger than 80 years old and nearly all the coppice forest younger than 40 years old, represents an important challenge for the future of the sustainable management of the Albanian forests.

Albania is a rich country in forest area and forest cover but has not much standing volume to harvest in the short- and mid-term future. Albania's forests are young and have a high carbon sequestration capacity.

2. Maintenance of forest ecosystems' health and vitality.

74% of the forest surface is assessed as healthy, while the rest has various problems and is affected by diseases or pests. Only 1% of the forest area is severely affected by diseases, pests, or other factors. Regardless of this positive figure, over the years the damage caused to forest area by wildfires or by pests and diseases has increased. The levels of damage from fires continue to remain at high levels, as well as damage from pests such as the pine processionary, which in the period 2019-2021 had a peak.

From the monitoring conducted in the last 5 years, a deterioration of tree damage is observed, up to the level of moderate damage and only a small percentage of them are classified with severe loss of needles or leaves and approximately only 10% of the damaged trees are dead.

In Albania, except for high forests, grazing remains a problem in general. The forest area affected by damage caused by animal grazing is the highest in the region. In Albania, this indicator is around 13%.

According to the statistics of EFFIS, only for the year 2021, around 29,000 ha of forests were destroyed by fire, regardless of ownership, while the dynamics of the number of fires for the last 13 years shows that the number of fires has been constantly rising and falling.

3. Maintenance and encouragement of production functions of forests (wood and non-wood).

The prolonged transition of the market economy in Albania has encouraged the use of forests beyond their possibilities. These developments have resulted in a negative balance between the harvesting volumes and annual growth or AAC.

The cuts were and are several times greater than the annual growth. The World Bank has supported studies that show that firewood consumption is twice the amount of total annual growth. Although, since 2016 with the declaration of the forests moratorium commercial logging has been prohibited, the latest official data shows 1218 m³ of timber seized by the National Inspectorate of Territory Protection. Illegal logging, apart from being an abuse of the law, is done outside any technical criteria, causing irreparable damage to forest ecosystems.

This indicator was monitored within the framework of the 2018 IKPK, and results show that the area affected by illegal logging is about 96,000 ha, or 8% of the total forest area at the national level, where coppice forests are the majority with 55% of the total area, followed by high forests with 39% and bushes with 6%, at the national level.

The general trend of decreasing forest productivity in Albania has not come as a result of the decline in the biological growth potential of forest trees, but from the methods used for their over-exploitation, as well as from state structures not being able to control illegal logging and corruption in the timber market of wood materials, domestically and abroad.

The forests have suffered a considerable degradation and as a consequence of the high level of illegal logging in years, a level which has influenced not only the reduction of forest productivity but also the increase in the rate of erosion in forest lands with wide spatial extent.

On the other hand, the production of NWFP has been increasing every year, with exports valued at over EUR 50 million. This group of products mainly includes medicinal plants and essential oils.

4. Maintenance, conservation, and appropriate enhancement of biodiversity in forest ecosystems

Starting from the composition, the forests in our country are dominated by broadleaf forests, with approximately 80% of the surface and only 11% consisting of conifers, while mixed coniferous and broadleaf forests occupy approximately 9% of the surface.

High forests are dominated by broadleaf forests in 60% of their total, while lowland forests are mainly composed of broadleaf species dominated by the oak type with 67% of the total area of lowland forests.

Considering the inaccessible forests, we can be said that over 60% of our country's forests are natural or semi-natural forests, where it is worth emphasizing the small percentage of climax forests.

In the structure of the afforestation's, exotic conifer and deciduous species are used. Of the conifer species, always used on limited or experimental areas some of the introduced species are *Pinus radiata*, *Pinus muricata*, *Pinus maritima*, *Pinus brutia*, *Pinus eldarica*, *Pinus sylvestris*, *Pinus ponderosa*, *Pinus strobes* and *Pseudotsuga menziensis*-Franco.

Pseudotsuga menziensis is planted for its characteristics as a fast-growing and highly productive species. It manifests flexibility in climate change, while tolerance to heat and drought gives it a competitive advantage in similar environments. Introduced conifers are generally not invasive species.

Among the exotic broadleaved introduced in Albania are *Eucalyptus viminalis*, *E. globulus*, *E. dalrympleana*, *E. nitens*, *E. gunii*, *Acacia saligna*, *Populus x Americana guinnier* such as I-214, Baccolari, San Martino, BL Costanzo, Onda, *Ulmus americana* and *Robinia pseudoacacia*.

Acacia, *Eucalyptus*, and poplar hybrids have been planted in large areas, giving priority to their cultivation as fast-growing species, and there have been many results in linear plantings and plantations. *Acacia* is declared as an invasive species in Albania.

The amount of dry wood in natural forests depends on many factors such as type, composition, structure, stage of forest succession, type and frequency of natural disturbances, type of management, soil

and climatic characteristics of the country. Their numbers vary greatly between quiet, undisturbed, and managed forests. Late stages of natural forest development are characterized by a greater amount of drywood diversity. According to ANFI 2018, dead or fallen trees are present in about 1% of the forest fund.

Forests, woodlands, and pastures cover about 340,438.00 ha or 66% of the protected areas network. 21% of the total forest and pasture area of Albania is in the network.

The establishment of the Natura 2000 network in Albania has been initiated. The project NaturAL – “Strengthening National Capacities in nature conservation – preparation for Natura 2000 Network” (IPA 2013), aimed to halt the loss of biodiversity in Albania through improved Management of Protected Areas. It initiated and supported the designation of the Natura 2000 network by developing a preliminary list of Natura 2000 sites, and invested in 3 visitor centers, 8 rangers’ buildings, equipment, tools, infrastructure, means of transport, knowledge, capacities and skills in 10 protected areas, covering 66% of the national territory under protection. This process has revealed significant knowledge gaps concerning the distribution of habitat and species in the country. Successful establishment of the Natura 2000 network requires updated and new management plans (MPs) for the protected areas, addressing the challenges in nature conservation and management, including climate change.

Given the limited information on the population of species present in Albania, further efforts should be devoted to the inventory and monitoring of bird species. The limited level of knowledge on distribution of habitats and species hinders the appropriate identification and protection of relevant sites, as well as the selection and implementation of appropriate conservation measures. A preliminary list of potential Sites of Community Importance (pSCIs) and Special Protection Areas (SPAs) has been developed and includes 44 sites. However, not all pSCIs are well defined in terms of boundaries and management priorities. The proper definition of pSCIs boundaries requires further expert support for habitat mapping and species distribution areas on each proposed site. Additionally, a wide data collection campaign must be undertaken to improve knowledge on habitat and species distribution over the country. This information shall contribute to the revision of existing and development of new Management plans of protected areas.

5. Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water).

Forests and forest lands for soil and water protection, in accordance with their status, are forest areas that include:

- the forest areas around the basins of the hydropower plants in Albania
- forest areas around large basins of irrigation reservoirs
- lowland or riverside forest belts
- all forests located on steep slopes or eroded and slippery soils

From the information gathered, the forests along the lower reaches of the main rivers, intended to protect dams and agricultural lands from flooding, have been damaged in most cases.

The coastal forest belt for land protection from sea erosion is damaged by occupation and construction, currently fragmented along its entire length starting from Velipoja to Vlora. The same has also been experienced by the forests in the basins of the hydropower plants, because of the great role they play as a more efficient cover in the prevention of solid flows in the water bodies. The Albanian Electric Energy Corporation neither invests nor promotes municipal, state or community forest structures for their maintenance or expansion.

This inadequate treatment of their role and the manner of implementing the above structures within the forests has minimized the role of soil and water protection forests.

6. Maintenance of other socio-economic functions and conditions

The forest resources are mainly state/public owned, only 3% of the forest area is under private ownership.

Publicly owned forest land in Albania is predominant (Figure 1), with a minor share of private forests, which according to INSTAT (2014) has been stable at 28,780 ha (3%). Publicly owned forests are mainly managed (77%) by municipalities, except for forests within protected areas (20%) that are managed by the National Agency for Protected Areas.

The number of employees in the public forestry sector has been decreasing continuously compared to the number of employees in the early 2000s.

The decentralization reform in forests has increased the potential of employment in this sector, especially near the forest administrations of the country's municipalities. Regardless of the legal obligation, the vast majority of municipalities have not respected this obligation regarding the number of forest specialists. Today, only 30% of the employees in the forestry administrations of the municipalities have a higher education in forestry.

Based on Article 13/3 of the Law No. 57/2020 dated 30. 04. 2020 "On the forests", the income generated from all possible activities in the forest fund should be used to the extent of 100% for investments in the forest/pasture fund owned by the municipality.

In the vast majority of cases, the structures responsible for municipality forests do not have information and are not able to provide any, on how funds collected from the income were used for a period of almost 8 years that the municipalities own and administer the forests and pastures.

It should be emphasized that these structures have no role in the processes of approving the use of these revenues from the municipality. In some cases, the income generated from the forestry by the municipalities was spent on the item "Salary from the income" for various employees that they recruited in the structure responsible for forests.

Chapter X. Areas of possible further development of SFM in the Country

The topics below represent some of the problematics that cause the gap towards a sustainable management of the forest resources in Albania and in the SEE Region.

1. Drafting and implementation of a 10-year National Afforestation Program

Albania's forest resources are today at a stage that requires increased care to place their development on the path of a sustainable government. Regardless of some initiatives in recent years to increase the forested areas, a national afforestation program is needed for a period of at least 10 years. The drafting of this program requires in advance the provision of funding sources in years as well as initial investments in large nurseries that will support the realization of this program.

This program should be designed on the basis of the approach to Forest Landscape restoration, as a recommended approach in the framework of the EU Strategy for Forests 2013.

2. Enhance the digitalization in the forestry sector

The capacity of NFA for environmental/forest monitoring and information management in Albania should be strengthened by establishing an operational environmental information management and monitoring system as ALFIS. The need for a Forest Information and Monitoring System that is integrated throughout relevant government institutions and that uses international monitoring standards for indicator development, data collection, analysis, and policymaking, should be addressed. The existing technical and institutional capacity in NFA should be increased to align its management and monitoring efforts with global monitoring and reporting priorities of the ministry responsible for Environment.

Increased human and infrastructure capacities in this area will improve reporting to the Rio Conventions, European Environmental Agency, EU and lay the groundwork for sustainable development of forest resources through better-informed forest and environmental policy.

3. Consolidation the institutional and the legislative framework of the forest sector

The organizational structure of the NFA should be consolidated through the establishment of the organizational structures of the NFA in 4 regions. The organizational structure of NFA should be improved in accordance with its responsibilities as well as the challenges of the forest sector in the near and distant future.

An increase of NFA staff and infrastructure capacities is needed in fields like IT, remote sensing, mapping, to enable NFA to better perform its National Forest Inventory and ALFIS responsibilities.

In the municipalities there are established structures or appointed persons for the forest management, but the forms or titles of these structures vary in different municipalities, including: agency, directorate, department, etc. Often the responsible unit of forests is attached to the responsible structures of agriculture, environment, waters, water basins, etc. There is no clear orientation and organization of the structures responsible for forests in the country's municipalities.

The further consolidation of the decentralization process in the forest sector through the standardization of the structures responsible for forests at the municipal level and the completion of the forest registration process in all municipalities as two important elements towards a sustainable governance of forests by communities.

4. Financial support for the Municipalities to draft the Forest Management Plans for all the Forest Economies of the country

The forest management plan is the basic document for the sustainable governance of a forest economy, which contains the analysis of the state of the forests, defines the objectives that must be achieved in function of their status, as well as plans the measures for their treatment and interventions for the next 10 years.

The technical governance of the forest and pasture sector is done based on the implementation of forest management plans and drawing up a forest management plan is a legal obligation for forest owners. From a total of 417 forest economies in the country, only 42 forest economies are covered with management plans and other 32 management plans are in process. Less than 20% of the forest economies have a management plan.

The lack of forest management plans is a very big problem for sustainable management of forests, standardization of the activities and operations in forest sector, establishment of the new forest cadastre register, and the updating of the forest information system (ALFIS).

5. Establishing an integrated system for the protection of forests

Establishing an integrated system for the protection of forests from pests and diseases, including forest fires.

Institutional structures in charge of forests should be enabled to continue practicing forest protection, a responsibility that was lost with time.

Today, the protection of forests is a problem that crosses borders because fire and forest pests know no borders when it comes to spreading. A regional or integrative approach is necessary in setting up these systems.

7. Implementation of EUTR/FLEGT Regulations

It is necessary to determine the institutions responsible for the implementation of EUTR/FLEGT regulation, as well as increase human and infrastructural capacities, as soon as possible.

Thus preparing the national and regional departments for the implementation of these regulations will help reduce illegal activities that damage forests and prevent the implementation of sustainable forest management systems and practices.

Chapter XI. Conclusion

SFM is accepted as the primary approach in the development of the forest and pasture sector in Albania. This concept is sanctioned in all the main forest policy documents in the country, including the Law on Forests.

The practical implementation of this concept leaves much to be desired for many reasons.

Regardless of the strong support from foreign donors, the forest sector has continued to be in a state of transition since the beginning of the 90s. The decentralization reform from 1995 to 2016 completely changed the structure of ownership and responsibility over forests.

With this reform, the municipalities became the owners of the forests and are responsible for the governance of the forest resources under their ownership.

For the exercise of these functions and responsibilities, the municipalities have a significant lack of human and infrastructural capacities. Some of them have not yet consolidated their administrative structures responsible for forests. These problems, including the difficulties in controlling the territory or the insufficiency of the budgets dedicated to forestry, make it difficult to apply SFM in practice.

The creation of the National Forestry Agency filled the missing link after the decentralization and administrative reform, which connects the municipalities with the central government and can support the local government units to put the governance of the sector on the path of implementing the SFM.

Reforestation based on multi-functional reforestation plans is a legal obligation, but it has not been fully implemented.

Today, only 20% of over four hundred forest economies in the whole country have a forest management plan or the management plan is in the process of being drawn up. In the last year and with the support and positive pressure of the National Agency of Forests and the Ministry of Tourism and Environment, as the ministry responsible for forests, there is an increased interest of the municipalities to direct a part of the income generated from forests in investments that include the drafting of the

forest management plans. However, not all municipalities of the country have sufficient income from forests to support the drafting of forest management plans and they need the support of the Albanian government in this process.

As the ANFI 2018 data shows, Albania's forests are today mostly young forests, regardless of the silvicultural system (High forests, coppice forests or shrubs areas). For many years in the future, their potential will remain insufficient to supply raw materials to a wood processing industry based on internal forest resources.

In this context, the forests of Albania today have an urgent need to be served and taken care of, such as silvicultural interventions (afforestation, reforestation, clearing, thinning, protection from fires, pest diseases, etc.)

Chapter XII. Recommendations

- An analysis of the document "ON THE POLICIES OF THE FOREST SECTOR IN ALBANIA - 2030" should be undertaken, as an overdue legal obligation and the necessary changes should be made in this document for the implementation of the policies and measures
- A National Forestry Program should be drafted with an extension of at least 10 years in the FLR approach in accordance with the EU Forest Strategy 2030, EU Green Deal and Green Agenda for WB
- After the completion of the forest registration process, as part of the consolidation process of the decentralization reform in this sector, it is necessary to consolidate and standardize the structures responsible for forests in the 61 municipalities of the country.
- The number of forest specialists in the municipalities should be increased in accordance with the obligations regulated by the Law on Forests and increasing human and infrastructural capacities is an urgent need.
- The National Forestry Agency organisational structure should be fully implemented on the entire territory of the country, including the number of necessary forest specialists to be able to fully exercise the important responsibilities of the NFA in implementing the SFM.
- The human and infrastructural capacities of NFA should be increased, especially those in support of the realization of the National Forest Inventory, the operation of ALFIS, the monitoring of forests and the obligation to provide information on forest resources inside and outside the country, **through a national professional training programmes in forestry sector**
- The implementing process of the new National Forest Inventory should begin immediately, according to the 8-year rotation approach sanctioned in the Law on Forests, as the most important process to support the design and the analysis of the impacts of forest policies
- The Albanian Forest Information System (ALFIS) should be made fully functional
- Support from the government of the municipalities with direct investments for the design of all forest management plans for the forest area they own
- The structures responsible for forests at the central and local level should be enabled to implement the EUTR/FLEGT Regulations, in cooperation with other government structures.
- A clear orientation of scientific research and innovation in forests in support of solving problems on the way to SFM

SUSTAINABLE FOREST MANAGEMENT IN BOSNIA AND HERZEGOVINA, FEDERATION OF BOSNIA AND HERZEGOVINA

National Report

National Expert:

Dr. Bruno Marić

Chapter I. Abbreviations

BiH	Bosnia and Herzegovina
C	Canton
CFMC	Cantonal forest management company
CFO	Cantonal Forest Office
CE	Circular economy
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNVP	Connecting Natural Values and People
EU	European Union
EUTR	European Union Timber Regulation
FAO	Food and Agriculture Organization
FBiH	Federation of Bosnia and Herzegovina
FEA	Forestry and Environmental Action
FIRMA	Fostering Interventions for Rapid Market Advancement
FMAWMF	Federal Ministry of Agriculture, Water Management and Forestry
FMU	Forest management unit
FP FBiH	Forest Program of the Federation of Bosnia and Herzegovina
FSC	Forest Stewardship Council
FMP	Forest management plan
FLEGT	Forest Law Enforcement, Governance and Trade
GEF	Global Environment Facility
HCVF	High conservation value forests
HCV	High conservation values
IKEA	Ingvar Kamprad Elmtaryd Agunnaryd
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem services
MoFTER	Ministry of Foreign Trade and Economic Relations

LDN	Land degradation neutrality
NFI	National Forest Inventory
NBSAP	National Biodiversity Strategy and Action Plan
R&D	Research and development
RS	Republic of Srpska
SDG	Standard Development Group
SLM	Sustainable Land Management
SFM	Sustainable forest management
USAID	United States Agency for International Development
WWF	Worldwide Fund for Nature

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Chapter V. Introduction

Forests within Bosnia and Herzegovina (BiH) represent a valuable natural resource and encompass a wide diversity of forest habitats together with a rich and varied flora and fauna (Anon, 2010). According to the last official National Forest Inventory (NFI) for Forests and forest land cover account for 3,2 million ha or approximately 63% of the overall land area of BiH (Table 1). The second NFI was conducted sixteen years ago in the period 2006–2009, but data are still not published up to this very day. In order to overcome this problem for the purpose of this report data from the FIRMA study (USAID, 2012) containing certain data from the second NFI were used. The predominant forest type is high forest with natural regeneration (51%), followed by low or coppice forest (38%) reflecting the overall emphasis on close to nature type of forestry and forest practice and efforts to increase the industrial raw material base during the late socialist period.

Table 1: Size of forest area by management and protection regime

Vegetation form	Available surface				Protective forests	Total
	Economic forests	Non-economic forests	Protected forests	Special purpose forests		
	ha	ha	ha	ha		
1. High forest	1.329.500	46.300	5.200	8.800	262.600	1.652.400
2. Coppice forest	843.200	158.700	1.600	2.400	246.300	1.252.200
1+2. All forests	2.172.700	205.000	6.800	11.200	508.900	2.904.600
3. Shrubbery	52.700	41.100	0	100	36.700	130.600
4. Barren	55.700	88.400	800	3.400	38.900	187.200
3+4. Shrubbery and barren	108.400	129.500	800	3.500	75.600	317.800
5. Other forest areas	3.300	3.100		100	2.600	9.100
FAO forest (1+2+3+5)	2.228.700	241.600	6.800	11.400	548.200	3.035.700
6. All forest and forest land	2.284.400	337.600	7.600	14.800	587.100	3.231.500

Source: USAID, 2012

For BiH wood and timber are the primary products of forest management. A similar situation related to the underestimation of forest area using old inventory data holds true for quantities of growing stock and carbon stock. The data from the second NFI indicate a growing stock of 435 million m³ in BiH, amounting to 201 m³ per ha (Table 2). Data from NFI (Table 2) suggest that 5.7 million m³ is harvested per year as a 10-years average in BiH. As compared to an annual increment of more than 11 million m³ this means that only around 50 percent of the annual increment is used for wood production, which is an extremely low value. The harvesting rate in coppice forests is at a rate of 43% even more marginal (FAO, 2015).

Table 2: Growing stock, increment and felling

Forest types	Publicly owned		Privately owned		Total	
	000 m ³	m ³ /ha	000 m ³	m ³ /ha	000 m ³	m ³ /ha
Growing stock						
High forests	299.630	282	53.968	202	-	266
Coppice forests	35.710	87	46.412	107	-	97
Total	335.340	228	100.380	143	-	201
Total annual volume increment						
High forests	7.481	7,03	1.622	6,1	9.087	6,83
Coppice forests	907	2,22	1.192	2,75	2.095	2,48
Total	8.348	5,67	2.814	4,09	11.182	5,16
Average annual felling*						
High forests	4.416	4,15	446	1,68	4.819	3,62
Coppice forests	307	0,75	598	1,38	899	1,07
Total	4.723	3,21	1.044	1,5	5.718	2,63

Source: USAID, 2012

Forests in BiH comprise a huge diversity of forest types, ranging from coastal Mediterranean forest to mountain forests in central BiH. Distribution of forest types and the spatial patterns of coniferous forest in the highlands, mixed forests in the mid altitudes, and broadleaved forest in the low-level terrains and floodplains are presented in Figure 1. Forests represent one of the major natural resources of the country. Due to their natural and diverse structure, as well as extensive natural regeneration, they represent crucial resources for the further development of BiH. The main species found are fir, spruce, Scots and European pine, beech, various species of oak, and less significant numbers of noble broadleaves, including maples, elms, ash, together with fruit trees (cherry, apple, pear). Around 80 percent are public forests, and around 20 percent are privately owned (FAO, 2015)

Picture 1. Types of forests in Bosnia and Herzegovina

Source: Forests of Bosnia and Herzegovina, 2013

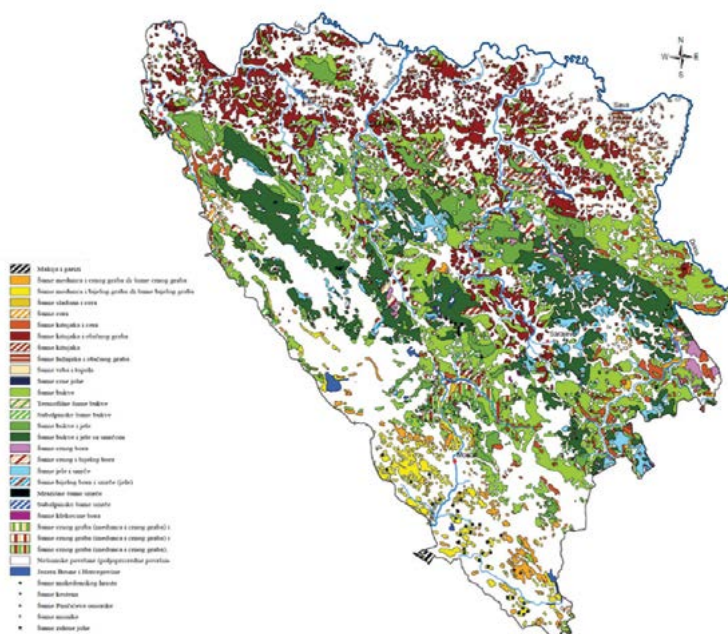


Table 3 (Glück et al., 2010) shows the main forest categories in BiH according to different ownership classes. It has to be noted that this data still relies on the old NFI in the absence of newly published data. The management planning process and management regimes applied in major forest types in BiH are directed toward multi-aged silvicultural systems. The application of close to nature forest management represents a basic principle in forest management practice.

Table 3: Main tree species according to public and private forests (for example broadleaves, conifers, mixed forests)

Forest category	Public forests	Private forests	Total
	%	%	%
High forests	92	8	100
1) Beech	91	9	100
2) Fir, spruce and beech	97	3	100
3) Scots and Austrian pine	96	4	100
4) Sessile oak	75	25	100
5) Other high forests	83	17	100
Coppice forests	68	32	100
1) Beech	62	38	100
2) Sessile oak	52	48	100
3) Mixture coppice	73	27	100
4) Other coppice	80	20	100

Source: Glück et.al., 2010

Data from the USAID study related to the latest NFI indicate that coppice forests amount to 1.252 million ha in total, and to 843.000 ha in productive (economic) forests, i.e., almost 40 percent of productive forests. Although the Republic of Srpska (RS) and the Federation of Bosnia and Herzegovina (FBiH) share almost the same percentage of high forest, the coppice forests are remarkably larger in RS. The ratios of high forests and coppice forests are diametrically opposed when comparing public and private ownership. While the state owns 72 percent of high forests, private forest owners are predominantly in relation to coppice forests (434.000 ha or 62 percent of total economic coppice forests) (Table 4).

Table 4: Ownership types by forest categories

Forest category	Public forests		Private forests	
	ha	%	ha	%
High forests	1.063.400	72	266.100	38
Coppice forests	408.700	28	434.500	62
All forests	1.472.100	100	700.600	100

Source: USAID, 2012

Forests and forest lands in the FBiH occupy an area of about 1.510.937,5 ha, of which 1.233.807,5 ha or 82% are owned by the state and about 277.130 ha are privately owned and owned by other legal entities or 18%. According to the data presented in Table 5, the total area of state-owned forests and forest lands in the FBiH is 1.233.807,5 ha.

Table 5: Structure of forest areas and forest lands in FBiH

Vegetation form	Area ha	%
High forest with natural regeneration	493.479,1	40
High degraded forests	14.898,8	1,2
Forest plantations – cultures	60.517,5	4,9
Total high forest	568.895,4	46,1
Coppice forest	257.879,6	21,0
Overgrown unproductive areas	17.809,3	1,4
Total overgrown forest land	844.584,4	68,4
Productive barren land	159.913,5	13,0
Total for management	1.004.497,9	81,4
Non-productive areas in terms of forestry	104.185,5	8,5
Mined surfaces (in all forms of vegetation)	125.124,2	10,1
TOTAL	1.233.807,5	100

Source: Ministry of agriculture, water management and forestry of the FBiH, 2021

From the data presented in Table 6, it follows that the total wood stock of all state forests in the FBiH is 180.016.229 m³. It is evident from Table 5 that the total annual volume increment of all forests together amounts to 4.294.396 m³. Conifers account for 1.878.920 m³ or 44%, and deciduous trees account for 2.415.476 m³ or 56%. The total allowable cut for all forests together amounts to 3.048.491 m³ of which 1.418.218 m³ or 46% are conifers and 1.630.273 m³ or 54% are deciduous trees (FMAWMF, 2021).

Table 6: Wood stock, annual volume increment and annual allowable cut in FBiH

WOOD STOCK					
Vegetation form	Conifers m ³	Broadleaves m ³	Total m ³	m ³ /ha	%
All high forests	76.706.825	80.393.412	157.100.237	311,3	88,5
Coppice forests	0	22.915.992	22.915.992	88,9	11,5
TOTAL	76.706.825	103.309.404	180.016.229	236,8	100,0
ANNUAL VOLUME INCREMENT					
All high forests	1.878.920	1.581.486	3.460.406	7,36	80,6
Coppice forests	0	833.990	833.990	3,23	19,4
TOTAL	1.878.920	2.415.476	4.294.396	5,94	100,0
ANNUAL ALLOWABLE CUT					
All high forests	1.418.218	1.319.404	2.737.622	4,85	89,8
Coppice forests	0	310.869	310.869	1,21	10,2
TOTAL	1.418.218	1.630.273	3.048.491	3,51	100,0

Source: Ministry of agriculture, water management and forestry of the FBiH, 2021

Chapter VI. Strategic and legal framework in the Federation of BiH

Under the BiH Constitution, the ownership of public forests rests with the two entities and forms part of their natural resources. There is no BiH national forest policy and the responsibility for preparing forest policy and strategy rests at the entity level. The small forestry department within the state Ministry of Foreign Trade and Economic Relations (MoFTER) has some responsibility concerning international relations and forestry.

In 2009, the Federal Ministry of Agriculture, Water Management and Forestry (FMAWME) initiated the process of drafting the Forest Program of the Federation of Bosnia and Herzegovina (FP FBiH) within its competences, with the aim of adapting the departmental policies of the FBiH to the relevant policies of the European Union (EU). The FP FBiH will, in line with international agreements and obligations, define the general forestry policy and game management policy in the territory of the FBiH, oriented towards the preservation and sustainability of forest management, including the maintenance and improvement of biodiversity in forests and on forest land. The goal is to define forest policy and forest strategy in the FBiH (FMAWME, 2021).

It is foreseen that the FP FBiH consists of a general and an implementation part. In the general part, the main goals, principles and general guidelines for sustainable forest management in FBiH are defined based on realistic indicators of the forestry sector, while meeting the requirements of international criteria and indicators of sustainable forest management. In the implementation part, goals and certain methods of implementation, including financing, are set and elaborated for their realization within a certain period. (FP FBiH-General part, 2017). Originally the FP FBiH was to be completed by February 2011, but the general part of FP FBiH, which defines forest policy, was completed and approved by the FBiH Government in 2017, and its adoption by the FBiH Parliament has been extended until the adoption of the Law on Forests (FMAWME, 2021). In order for FP FBiH to be complete, it is necessary to adopt its implementation part with detailed strategic and operational goals that should be implemented in practice. The process of development and adoption of the FP FBiH was characterized by a long duration and the expression of narrow interests of certain interest groups, without readiness for a complete and participatory creation of a comprehensive FP FBiH. Ultimately, it resulted in the adoption of only the General Part of the FBiH Forestry Program, while the Implementation Part has not been adopted yet. The adoption of the Implementation Part is questionable because 12 years have passed since the beginning of the process, and it is necessary to update the studies and collected data in order to obtain a current situation in the FBiH forest sector. The dilemma that arises is whether it is necessary to work on a new FP FBiH, after so many years have passed, and whether to work on a completely new basis or to use the existing document (Marić, 2021).

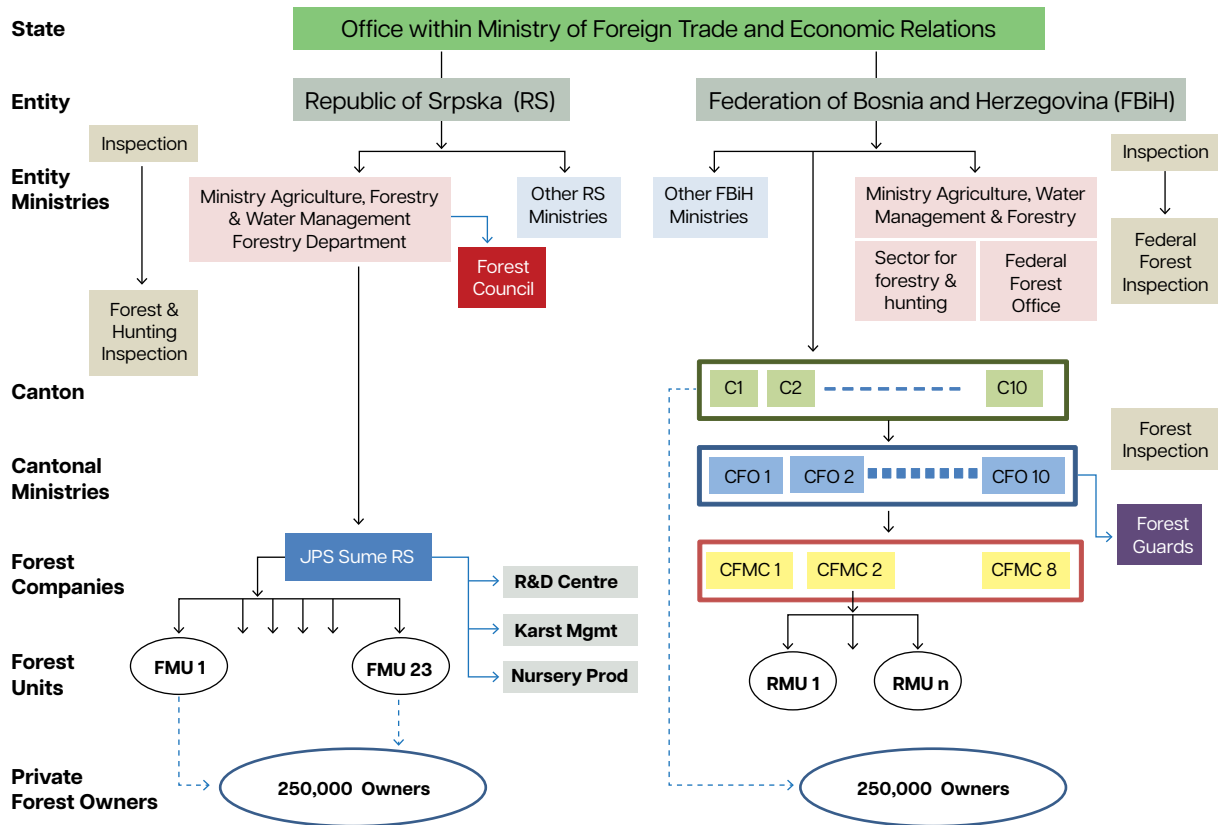
The regulatory framework in BiH is complex and poses a major issue when addressing the needs for adaptive and participatory forest management. As shown earlier, the sector is organized on the entity level. Based on the Decision by the Constitutional Court of the FBiH of 14th April 2009 (Official Gazette of the Federation of BiH no. 36/09) the Law on Forests (Official Gazette of the Federation of BiH no. 20/02, 29/03 and 37/04) is no longer in force as of 27th November 2009. As a preliminary solution pending the adoption of the new law on forests, the Government of the FBiH adopted the Regulation on Forests (Official Gazette of the FBiH no. 83/09, 26/10, 33/10 and 38/10). As per the Decision of the Constitutional Court of the FBiH no. U-28/10 of 23rd March 2011 (Official Gazette of the FBiH no. 34/11), the Regulation on Forests should have been in force until 6th December 2011. Since the Regulation on Forests is no longer in use, as of 6th December 2011, and as the Law on Forests hasn't been adopted yet, the forest sector is legally unregulated at the level of FBiH (FAO, 2015).

At the 110th session held in 2017, the Government of the FBiH, after considering the Draft Law on Forests prepared by FMAWMF, finalized and sent the Draft Law on Forests to the Parliament. In 2018, 2019 and 2020 the Government of FBiH sent a letter to the House of Representatives and the House of Peoples of the Parliament requesting that the Draft Law on Forests be included urgently in Proposal of the agenda. To date, the law in question has not been considered in any of the houses of the Parliament of FBiH. As a result of the failure to pass a federal regulation for the field of forestry, nine cantons passed their own regulations for the field of forestry. The adoption of cantonal laws on FBiH forests deprives them of the competences prescribed by the Constitution of FBiH, and the management of forests, the question of ownership as well as the allocation of financial resources for the use, protection and improvement of forests are regulated in different ways, which is contrary to the constitutional provisions (FMAWMF, 2019, 2021).

Chapter VII. Institutional framework in the Federation of BiH

The organizational set-up and institutional arrangements of the forest sector are shown in Figure 2. Direct competences in forestry are held at the level of entities (FBiH and RS) and the Brčko district. The institutions at these levels are responsible for forest policymaking, for forest legislation and law implementation. Apart from responsibilities for foreign trade and international economic relations, the Ministry of Foreign Trade and Economic Relations (MoFTER) is responsible for tasks and duties falling within the jurisdiction of the state of BiH, including defining policies and basic principles, co-ordinating activities and consolidating entity plans with those of international institutions in the areas of agriculture, energy, environmental protection, use of natural resources and tourism.

Picture 2. Organization of the forest sector in Bosnia and Herzegovina



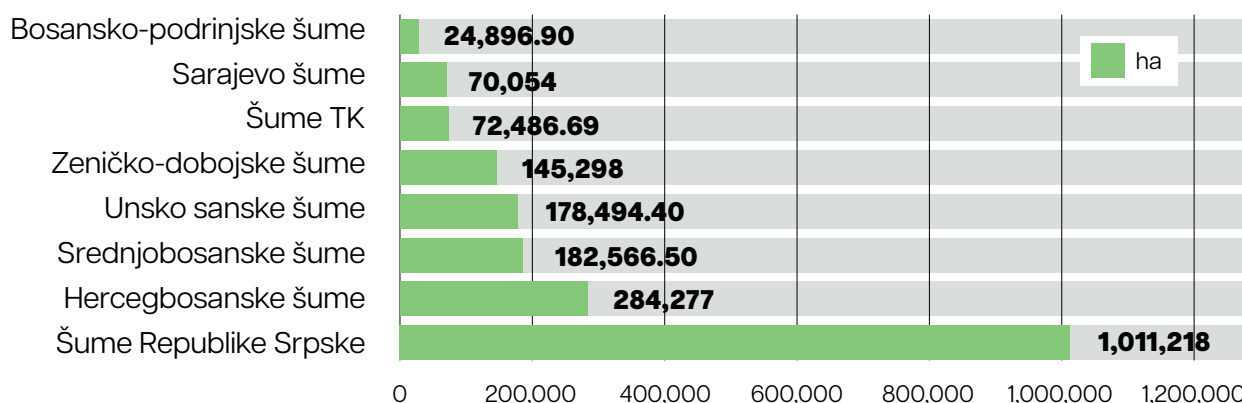
SOURCE: FAO 2015

Forest resource management is carried out at the entity level. FbiH devolves its management competencies to the cantonal governments. Each canton has competency over the forest resources within its administrative boundaries. A more controversial issue, however, is the extent of forest-related mandates. At the FbiH level, there is a Forestry Department within the Ministry of Agriculture, Water Management and Forestry which comprises of two units. The first is a Forestry and Hunting Department with responsibilities for all legal aspects relating to forest law and related legislation. It acts as a permission awarding unit, e.g., is in charge of land use and forest management planning. The FBiH Forest Office is responsible for forest silviculture and protection, users of forest and subsidies and support payments for forestry, as well as the development and monitoring of processes in forestry including an overall monitoring role in relation to activities within the forest sector. The FBiH Forest Inspection performs overall inspection services safeguarding the implementation of all actions relating to the law on forests within FBiH. At the Cantonal level, the Ministry of Agriculture, Water Management and Forestry holds the responsibility, except in Sarajevo Canton, Zapadno-Herzegovački Canton and Bosansko-podrinjski Canton. In this respect, further important bodies are: Cantonal Forest Office and the Cantonal Forest Inspection. Private forest owners in BiH are not organized in interest associations, while their property is extremely small-scale and fragmented into a few parcels (Glück et al., 2011). The existing forest policies are developed with little to no consideration of or input from private forest owners. The Association of private forest owners "Naša Šuma" (established in 2006) and Association of private forest owners in Central Bosnia Canton (established in 2018) can be seen as an exception.

Chapter VIII. Description of projects related to Sustainable Forest Management (SFM)

The project "Promoting sustainable forest management in Bosnia and Herzegovina" was funded by IKEA, coordinated by WWF Adria and implemented by the Faculty of Forestry, University of Sarajevo in the period 2014-2020. The focus of this project was on forest certification as a tool to promote sustainable forest management (SFM). This included the preparation of public forest companies (Srednjobosanske šume d.o.o. Donji Vakuf and Šume TK dd Kladanj) for certification and the establishment of the Forest Stewardship Council (FSC) Standards Development Group in BiH. FSC Standard Development Group of Bosnia and Herzegovina (FSC SDG BiH) was established in 2016 with mission to develop FSC Standard for BiH with the aim of its application in the conditions of forest management in BiH. One of the most important results of this project is the adoption of FSC standards at the state level in 2019. This makes BiH the first country in the region with its own standards on the basis of which forest certification is carried out. During the project life this was 56.000 ha in the Tuzla canton, and more than 182.000 ha of forest were FSC certified. These two forest companies together with other six public forest companies in BiH are certified in accordance with the national FSC standard for sustainable forest management of BiH. At the moment, almost two million (1,969,291) of hectares are FSC certified in BiH and there are 9 FSC certificates for SFM (Figure 1). The results of the project are sustainable in a way that public forest companies are able to, for several years, maintain (finance with own funds) their FSC certificates and fulfil criteria and indicators prescribed by FSC as a proof of SFM practices.

Figure 1. FSC certified area in Bosnia and Herzegovina



Source: FSC, 2022

GEF Project "Sustainable Forest and Landscape Management" GEF (Global Environment Facility) grant agreement, number R2013-0037-BA for the project "Sustainable Forest and Landscape Management-SFLMP" between BiH and the International Bank for Reconstruction and Development (IBRD) in the role of the implementing agency of the Fund for global environment was signed on April 1, 2014. years. The total value of the Project for FBiH is 4,182,000 KM (2,788,000 USD). The goal of the project is to ensure the sustainable management of forests and landscapes important for economic development, which especially treats sensitive landscapes vulnerable in terms of ongoing degradation or the nega-

tive impact of climate change, such as fire risks. The development goal of the project and the global environmental goal is to “build capacities for forestry sector areas and demonstrate forest and landscape management approaches in threatened areas”. Project components include: 1. Improve planning and supervision for the purpose of sustainable forest management: Support for forest certification, Strategic plan for forest roads, Improvement of the information system for forest management in order to improve decision-making. 2. Demonstration and replication of sustainable forest and landscape management techniques in endangered areas, Afforestation - supported natural regeneration and restoration of endangered stands, Multipurpose forestry demonstration techniques, Demonstration and implementation of fire management techniques. The project was implemented through the Federal Ministry of Agriculture, Water Management and Forestry, i.e. the for the Project Implementation Unit in Forestry and Agriculture (PIU). Duration of the project: 31.05.2014. - 31.05.2019. years (FMAWMF, 2019).

Development of the Information System in forest sector of FBiH. The goals of an implemented Integral Information System in the FBiH forest sector are: to standardize data by type and volume, increase the level of data processing in order to reduce the gap between the characteristics of available equipment and active processing, speed up the exchange of all information within and between forestry institutions responsible for forest management. Activities on the development and implementation of a unique Information System were initiated with the aim of putting it into operation for comprehensive monitoring of the state and changes in the field of forestry. In the initial phase of the implementation of the Plan for the implementation of a forestry information system, the necessary ICT equipment and services for the establishment of Information System in the FBiH forest sector standards were procured, and with the support of the GEF project “Sustainable forest and landscape management”, services were procured for the creation of the Central Database model and programming of infrastructure modules in the field of Forestry Information System Standards, and as well as programming of applications for forest roads and organized input of data on forest roads collected from forestry companies. With the support of the GEF project “Sustainable Forest and Landscape Management” activities were carried out on the development of the State of Forests module in the area of Forest Records of Information System in forest sector of FBiH. The FMAWMF is taking measures to continue the development of Information System in forest sector of FBiH (FMAWMF, 2019, 2021).

In 2019, a Master plan of forest transport infrastructure in the Federation of Bosnia and Herzegovina was prepared by ENOVA, CEPOS and Wald-Projekt d.o.o. Bosanska Krupa. The Master plan of forest transport infrastructure aims to ensure quality information about the current state as well as future needs for the construction of forest transport infrastructure, on the basis of which it will be possible to create a detailed investment plan. The master plan also includes the development of guidelines and good practices for the construction and maintenance of the subject infrastructure in order to reduce the impact on the environment and society and improve the economic effects (financial sustainability of the exploitation and transport of forest wood assortments). The specific goals of this project were to: analyse the existing situation in terms of: determining the potential of wood mass (including biomass) up to the level of departments and sections for each Forest management area, determining the state of primary and secondary networks of forest roads, as well as the technology of extracting, removing and processing of forest wood assortments, estimates of planned felling quantities by periods of exploitation, insight into the technologies of felling, processing, extraction and transportation of forest wood assortments; propose areas of future forest opening priorities based on multi criteria analysis; process the economic and financial aspects of the development of the network of forest roads and process the environmental and social aspects of the development of the network of forest roads (FMAWMF, 2019).

Regional action for combating forest crime and corruption. The project was implemented in the period 2018-2021 in four Western Balkan countries: BiH, Serbia, North Macedonia and Montenegro. The project partners were FEA, the CNVP Foundation and Green Home, with the financial support of the Nor-

wegian Ministry of Foreign Affairs. This project created more enabling conditions for control on forests related crime, including an innovative information system, as well as the improvement of the monitoring mechanisms through practical sets of indicators and surveys. Overall objective of the project was to achieve good governance in the forestry sector and combat forest crime and corruption, by increased transparency and networking in the four target countries (North Macedonia, BiH, Serbia and Montenegro). Specific objectives of the project were: established regional network and exchange of knowledge, related to forest crime and corruption, improved access to information and established control mechanisms, related to forest crime and corruption, developed monitoring mechanisms, strengthen capacity of stakeholders to fight forest crime and corruption, developed National action plans to combat forest crime and corruption.

Supporting decision making and building capacity to support IPBES through national ecosystem assessments-Assessment of the state of nature and management of natural resources in Bosnia and Herzegovina 2018-2023, financed by the International Climate Initiative and World Conservation Monitoring Centre and implemented by the University of Sarajevo. The purpose of the project is to establish an instrument for making informed decisions on the use of biodiversity and natural resources. The objectives of the project are to prepare an Ecosystem and Ecosystem Services Assessment in Bosnia and Herzegovina, including the development of ancillary tools for policy makers, to develop and make available policy support tools and methodologies, establish a National Platform for Biodiversity and Ecosystem Services in IPBES, establish conditions for effective use of the Assessment and provide guidance to national project teams in other countries.

The process of developing the Natura 2000 network of habitats and species is ongoing in BiH. A more detailed review of habitats and species initiated in 2006 by the World Wildlife Fund's Mediterranean Programme Office (WWF-MedPo) through the project European Heart of Life was published in 2015 under the title Natura 2000 Bosnia and Herzegovina. This publication provides an overview of information on habitats and species from Annex I and II of the Habitats Directive that are located in BiH. The data overview was based on field research and, to a greater extent, on existing reference data. The most important result of the project is the creation of a digital database through the geographic information system (GIS) on the Arc GIS platform. Natura 2000 was published in BiH and an interactive map was also developed, offering an overview and detailed information on the species and habitats from the Habitats Directive present in BiH. The project also aimed at strengthening the national capacities for the identification of habitats and species that exist in BiH that are protected by EU legislation. Further activities and the implementation of the project Support to the Implementation of the Birds Directive and the Habitats Directive in BiH (October 2012–2014) supported the initial steps in the development of the Natura 2000 network across the country, an appropriate strategy for its implementation and its management plans. The project included six components: development of proposals for the Natura 2000 area; development of guidelines for preparation of Natura 2000 management plans; development of management plans for three selected Natura 2000 localities (Tišina, Orjen and Vranica); preparation and approval of draft regulations/decrees to support the establishment of the Natura 2000 network; establishment of the information system for the Natura 2000 network; communication support to the Natura 2000 project and network in BiH. Under the project other activities were also implemented (workshops, exhibitions), involving both the governmental and nongovernmental sectors, scientific institutions, representatives of international and local communities, and three pilot areas of the Natura 2000 network in BiH were established: Tišina Pond, Mt Orjen–Bijela Gora and Mountain Vranica. In 2008, the EU IPA project Support to Implementation of the Birds and Habitats Directives in BiH (2012–2015) analysed of the distribution of habitat types and species in the country, and a draft proposal on the Natura 2000 sites was composed. Altogether, 70 different habitat types and 208 species, of which 109 are birds, have been recorded and distributed as part of the proposed 122 Natura

2000 sites. The project also came up with a database compiling the distribution of species of habitats in the selected 122 potential Natura 2000 sites and their conservation status. The database was not made public after the project's completion. The database is currently based in and under the ownership of the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, and even though it is regarded as functional, it is not operational due to political disputes over centralized databases like this one (UNECE, 2018).

Chapter IX. Implementation of SFM principles in the Country in the preceding period and possible challenges

Although BiH has a decades-long tradition of sustainable forest management, based on the principle of continuity of management, there are currently no official strategic documents in FBiH that contain a comprehensive and detailed set of Pan-European criteria and indicators of sustainable forest management. As a signatory of Forest Europe, BiH has committed itself to implement the resolutions adopted at the Ministerial Conferences at the national level. However, apart from the report of the Agency for Statistics of Bosnia and Herzegovina on quantitative indicators, entitled "Report on the State of European Forests for the Level of the Whole of Bosnia and Herzegovina", which is prepared every 4 years, no significant progress has been made in this matter. In addition, the data presented in the mentioned reports, collected from several sources, are incomplete and in some cases outdated. When it comes to the set of general qualitative indicators of sustainable forest management, so far there have been no activities in terms of reporting for the purposes of publications (reports) on the State of European Forests prepared by Forest Europe (Marić, 2021). Criteria and indicators were recognized in FP FBiH in study: Preservation of stability and improvement of forest ecosystems from 2011. For the previous management systems used in the forests of FBiH, it can be stated that they had the character of sustainable forest management with the principle of continuity of forest management incorporated as a basic postulate. The deficiency was reflected in the absence of a regular monitoring system through the application of a defined set of criteria and indicators of sustainable management, which is not in accordance with current processes led by Forest Europe at the pan-European level (General Part of the FP FBiH, 2017).

Although BiH and FBiH don't have an adopted set of national criteria and indicators for sustainable forest management, BiH is a unique country in the region due to the fact that it has adopted a national FSC standard for SFM. On January 09, 2019 the National Forest Stewardship Standard for Bosnia and Herzegovina FSC-STD-BiH-01-2019 was approved and entered into force on March 22, 2020. The Standard was developed in the period February 2016 – September 2019 based on the consensus of the members of Standards Development Group of Bosnia and Herzegovina. It has undergone sufficient consultation and forest testing and merits approval by FSC. The Standard meets the aim and objectives of SDG members and represents a valuable resource for the promotion of sustainable forest management in BiH. The FSC Principles and Criteria (P&C) for Forest Stewardship provide an internationally recognized standard for responsible forest management. However, any international standard for forest management needs to be adapted at the regional or national level in order to reflect the diverse legal, social

and geographical conditions of forests in different parts of the world, and also in BiH (SDG BiH, 2019: The FSC National Forest Stewardship Standard of Bosnia and Herzegovina).

Chapter X.

Areas of possible further development of SFM in the Federation BiH

To have a complete FP FBiH it is necessary to adopt its Implementation Part, with detailed strategic and operational goals that should be implemented in practice. The long-term policy and five-year forestry strategy will be defined through the development and adoption of the FP FBiH, which will determine the main goals, principles and general guidelines for sustainable forest management based on the current state of forests, in line with internationally agreed guidelines for sustainable forest management.

At the moment there is no Law on forests in FBiH. The new law on forests in FBiH needs to be developed and adopted on the principles of forestry science and profession, and the process of its creation, adoption and implementation should be based on the principle of participation of all interested parties, transparency of the process itself and the consensus of the participants. During the adoption of the new Law on Forests, it is necessary to make maximum efforts to overcome political and administrative obstacles, which would result in the implementation of the Law on the territory of the entire FBiH. It is necessary to carry out a comprehensive analysis of the existing constitutional and legal solutions regarding the competence, rights and obligations of all levels (FBiH) of legislative and executive power (federal, cantonal and municipal) in the context of ownership, management and management of forest resources.

As the current organization of the public forestry administration has proven ineffective, it is necessary to approach its reorganization and establish a more functional model. The realization of this strategic goal implies that the Law on Forests of the FBiH prescribes a functional model of the organization of the public forestry administration (respecting the specifics of the administrative structure of the FBiH) by which the function of the owner would be more closely connected with the management function, which would lead to the creation of preconditions for the creation of a unified forestry policy and more efficient management of forest resources in the area of FBiH.

Cooperation between institutions in the forest sector and other related sectors (water management, agriculture, environment, tourism, energy, etc.) is necessary and must be improved. In this sense, it is necessary to harmonize regulatory instruments (sectoral laws and by-laws) and strategic documents (sectoral policies and strategies) and raise the level of development of institutional capacities within different sectors.

For the sustainable management of forest resources in BiH, it is necessary to ensure and improve inter-entity cooperation in the field of forestry. Since in both entities the forestry sector is regulated by separate entity laws on forests and corresponding by-laws, it is necessary to undertake the necessary activities for mutual harmonization of the regulatory instruments of forestry policy. In addition, it is necessary to conduct an analysis of entity strategic documents (entity policies, strategies and forestry development programs) with the aim of examining the possibility of their harmonization and ensuring long-term inter-entity cooperation.

In order to preserve and improve the stability of forest ecosystems, reduce dependence on fossil fuels as energy sources and develop rural areas, it is necessary to optimize the use of available biomass from forest ecosystems for energy production. In this sense, it is necessary to increase the share of forest biomass in the energy sector of the FBiH and promote the use of forest biomass.

Institutional linking of the forestry sector and the wood-processing industry. The realization of this goal implies the definition of institutional connections and the regulation of mutual relations between forestry and the wood-processing industry, including scientific-research and teaching institutions, chambers of commerce, associations and clusters, all with the aim of an institutionally coordinated and intersectoral approach to the development of these two sectors. In this sense, it is necessary to ensure continuous strengthening of institutional capacities for connecting the forestry sector and the wood-processing industry, improvement of the work of scientific and research institutions and their institutional connection, and more functional and efficient work of chambers of commerce and associations.

Ensure the management of non-timber forest products within the forestry sector in cooperation with other interested parties. To realize this goal, it is necessary to include all interested parties in the process of managing non-timber forest products, and to create standards and guidelines for the creation of the FMP that will be based on ecological, economic and social principles. It is important to apply good collection practices, promote the principles of ecological ethics and use scientific information for better management, preservation of biodiversity and protection of species and ecosystems.

Establishment of a monitoring system and formation of a central database for monitoring climate change at the FBiH level. The need for continuous monitoring of climate changes and their effects on forest ecosystems, through the establishment of permanent and temporary experimental areas in the field, is an essential prerequisite for a successful fight against climate change. The obtained data would be fed into a single database, which would create the conditions for making timely and valid strategic decisions in the fight against climate change at the FBiH level. For the full realization of this strategic goal, it is necessary to define and establish the necessary legal, financial, methodological, infrastructural, procedural and personnel assumptions. This system would be connected to similar monitoring systems in the region and beyond, which would improve cooperation with relevant international institutions that deal with monitoring, assessments and reporting on climate change and carbon stocks in forest ecosystems.

Establishment of a lifelong learning system in forestry. The system of lifelong learning implies the continuous memorization of knowledge and the development of professional abilities and skills of employees in the forestry sector, which are achieved through mandatory and optional education programs, throughout the entire working life. In the spirit of global development and integration into the "European knowledge society", it is necessary to develop a consistent lifelong learning program (which would include needs analysis, the development of appropriate educational content and the creation of organizational prerequisites for their realization), and to establish a credible and legally based licensing system for performance of specific jobs and tasks in forestry.

Improvement of communication capacities and practices within the forestry sector. In order to establish a mechanism for the coordination of communication activities within the sector, it is necessary to significantly strengthen the capacities of the forestry sector in the area of communication, to secure budget funds for communication activities within the sector, and to develop and implement a communication strategy. It is necessary to establish a dynamic flow of communication between all segments of the sector, and to standardize communication flows, following examples of good practices from other countries.

Creation and maintenance of the political-legislative and administrative framework, as well as institutional assumptions for ensuring the continuous development and improvement of the management of forests and forest lands, both in public and private ownership. One of the most important assumptions for the continuous development and improvement of the management of forests and forest land in private and public ownership is the creation and maintenance of a stable political-legislative and administrative framework for the management of forest resources in FBiH. It is necessary to pass a new Law on Forests that would define in a non-discriminatory way the instruments of forestry policy related to the management of forests and forest land in private and public ownership. In order to improve the management of private forests, it is necessary to ensure the prerequisites for the formation of interest associations of private forest owners and to establish an Advisory Service for owners of private forests.

Following the ranking of priorities within this research and as agreed with the representatives of the FMAWMF, the target areas for the forest sector in the FBiH in the next 10 years according to importance are as follows (1 - the least important, 10 - the most important):

1. Renewable Energy Directive (RED II/RED III)
2. Introducing/enhancing C&I for SFM into FMP
3. Sustainable Forest Management of private forests
4. NATURA 2000
5. NFI
6. Implementation of EUTR/FLEGT Regulations
7. Close to Nature Forest Management
8. Establishing new/updating existing Organizational framework
9. Developing/updating Legal framework
10. Developing/updating Strategic Framework

Chapter XI. Conclusion

Currently, only the general part of the FP FBiH has been adopted by the FBiH Government. The general part of the FP FBiH consists of principles, goals and guidelines for sustainable forest management based on data collected and processed in the form of studies. In order for the FP FBiH to be complete, it is necessary to adopt its Implementation Part with detailed strategic and operational goals that should be implemented in practice. The FP FBiH was started in 2010, and the General Part was adopted in 2017 by the FBiH Government. Apparently, the process took too long, and at this time it will be quite complicated to revise and update it, so that it can be planned based on real data in the FBiH forestry sector. The forest sector of FBiH has not been legally regulated since 2011, when the Law on Forests of FBiH from 2002 was repealed. After the draft Law on Forests of FBiH was sent to the Government of FBiH for consideration in 2017, there has been no progress on this matter so far. Despite the fact that there is no law on forests in FBiH, the forestry sector has been functioning for years through the implementation of cantonal laws on forests. In order to reach a compromise and satisfy all the numerous interest groups, the solution is to adopt an umbrella (federal) Law on Forests in which the criteria of sustainable forest management would be clearly recognized and represented. The institutional framework of the FBiH forestry sector is quite complex because it follows the administrative organization of the FBiH. It is necessary to improve the current organization of the institutional framework of the FBiH

forestry sector, which stems from the Law on Forests of FBiH from 2002, all with the aim of more rational management of forest resources. It is necessary to precisely define and separate obligations, responsibilities and competences, so that there is no overlapping of tasks, tasks and responsibilities of federal and cantonal institutions in the forestry sector. The existing resources, capacities and (in)efficiency of the institutional framework of the forestry sector do not provide opportunities for the implementation of a consistent forest policy and sustainable forest management. An adequate institutional framework (organization of the forestry sector) should ensure the protection and sustainable use of forest resources, while at the same time ensuring and strengthening capacities for the development and application of new concepts, knowledge and technologies for the purpose of sustainable forest management. The establishment of a unique information system for the forestry sector was foreseen in the Law on Forests of the FBiH from 2002, but this process took a long time and has not yet fully taken root. Several special modules have been established, but the problem is that, due to the lack of a legal framework at the FBiH level, data cannot be collected to create databases for certain areas in the forestry sector. The introduction of Information System in forest sector of FBiH would accelerate and facilitate the management and monitoring of forest resources. With the use of Information System in forest sector of FBiH, FMAWMF could plan certain activities and implement certain programs to improve the sustainable management of forest resources, as well as create and monitor the implementation of a consistent forestry policy at the FBiH level. Currently, in BiH at the entity level, there are two different and inconsistent processes related to the adoption of forestry development programs. The application of a set of Pan-European criteria and indicators of sustainable forest management implies reporting to Forest Europe, which in the case of BiH is difficult due to the inconsistency of entity forestry development programs. If a set of Pan-European criteria and indicators of sustainable forest management would be adopted and applied in BiH, both entities would use the same set of Pan-European criteria and indicators of sustainable forest management for data collection, assessment and the state of sustainable forest management could be reported using a coordinated methodology according to Forest Europe. In this sense, the application of a set of Pan-European criteria and indicators of sustainable forest management can be seen as an instrument for the harmonization of forest policy in BiH. The European standard for reporting on sustainable forest management can provide a unique applied framework in the form of Pan-European criteria and indicators of sustainable forest management for collecting and reporting on sustainable forest management in BiH (Marić, 2021).

There is a long tradition in the sustainable and close-to-nature type of management of forest resources within the Balkan region. The management planning process and management regimes applied in major forest types in BiH are directed toward multi-aged silvicultural systems. The application of close-to-nature forest management represents a basic principle in forest management practice. Depending on the forest structure and condition, the following management regimes are usually applied: single tree selection, group selection and management regime of group felling (FAO, 2015). The selection system is the main silvicultural system and clear-felling is prohibited except in special circumstances, e.g., the forest is so degraded that it is not possible to promote natural regeneration, or for sanitary reasons to prevent disease. In terms of forestry practice, the management of forests must be conducted according to national norms and technical parameters regardless of the type, size or type of ownership. The forest management plans (FMP) which are valid for a 10-year period include management prescriptions for each forest stand. Within the FBiH, FMPs for state-owned forests are prepared by specialized forest management planning companies. The Cantonal Forest Offices prepare the FMPs on behalf of private owners. Plans are approved by the entity forest authority and their implementation in practice is mandatory. Once FMP for state forests is prepared it has to be delivered to local communities to give their opinion/consent (during the period of 30 days). When it comes to FMP for private forests, owners are neither involved in the process of creating forest management baselines for private forests, nor do they know what is foreseen in those documents as a set of management measures for the next ten-year pe-

riod. As a result, the provisions of the forest management principles are insufficiently respected, which results in the continuous degradation of private forests. In such circumstances, all entities lose, both the owners of private forests (who often, due to the unfavourable social situation, prioritize only short-term economic interest), and the entire socio-political community, in terms of permanent loss of general interest (ecosystem services from private forests).

In FMPs measures are recognized to maintain and improve biodiversity and other environmental and social functions of forests through special management regimes of protected forests and special purpose forests in accordance with the reasons and decisions on their declaration and ban in the cutting or collection of endemic and endangered plant species. With the introduction of FSC certification in forest management practices in BiH there is certain improvement through the implementation of concept of high conservation value forests. In the process of identification, management and monitoring of high conservation values (HCV), public forest companies are obliged to collect data for monitoring of rare, endangered and threatened species in order to keep the FSC certification for sustainable forest management. HCV monitoring depends on the responsibility of employees in public forestry companies and the company's commitment to fulfilling FSC requirements in order to prove sustainable forest management. As a consequence of that, public forest companies are incorporating new chapter in forest management plans related to high conservation value forests, although that is not legally prescribed.

Systematic collection and analysis of data on biodiversity in BiH and biodiversity status monitoring are almost non-existent. Inventory of flora and fauna has not been done. Some progress has been made regarding the establishment of two Information Systems for Nature Conservation for FBiH and RS that have their own web applications and contain List of Endemic Taxa of SEE (only active to date). The List of Selected Environmental Indicators in BiH has been adopted containing 25 indicators relevant for monitoring the state of the biodiversity in BiH and reporting according to the UNCBD. In addition, the National Biodiversity Strategy and Action Plan (NBSAP) BiH (2015–2020) contains a list of thirty-eight proposed indicators for the measurement of progress towards 21 National Targets defined within the Strategy. BiH hosts 252 ecosystems and unique biotopes that are important from both the European and global conservation perspective, but the status of these ecosystems is unknown since no monitoring system is in place. There is generally neither a detailed nor recent map of types and distribution of these ecosystems. BiH's most important ecosystems are also most vulnerable and highly sensitive to climate change. No official biodiversity data repositories are established in BiH, so it is impossible to track the status of species diversity. There is also no information that any endangered species are extinct or that the status of any endangered species has improved since 2016. Furthermore, there is no Red List at the state level. The NBSAP BiH acknowledges that there is insufficient control of the use and export of various products arising from the use of local genetic resources (USAID, 2020).

In 2013, the EUTR Action Plan for BiH was adopted with support of a USAID – FIRMA project. This action plan was directed towards the promotion of responsible and legal utilization of forest resources and implementation of activities which could help export oriented companies to fulfil strict requirements of EUTR. The Action Plan has seventeen inter-related activities that are directed toward establishment of preconditions for fulfilment of EUTR requirements and improvement of current situation in forestry and wood-processing industry. Among other, activities such as the improvement of the current level of knowledge regarding the EUTR requirements, as concerns forestry and wood processing professionals, were proposed, but also the distribution of information to the public when it comes to measures for the prevention of illegal activities and corruption in the forest sector. Intensifying efforts on adapting the Forest law in FBiH and the implementation of legislation in all areas of BiH were part of the Action Plan as well. Some of the activities were directed toward the analysis of possibilities for the initiation of a Voluntary Partnership Agreement process in BiH as well as the establishment of all preconditions

related to CITES convention. One of the main pillars of Action Plans was a focus on improving human and institutional capacities in relevant institutions related to preventing and combating illegal activities in forestry. Furthermore, the support of the forest certification process and certification from wood processing companies are essential activities in this Action Plan. Establishing continuous communication and interaction between forest and wood processing enterprises and increasing transparency and accountability of forest management with strong support from civil society can lead to overcoming the export barriers for wood products from BiH. In 2016 the Council of Ministers of BiH adopted the Information on implementation of EUTR in BiH, which contained basic data on required activities for harmonization with this regulation (Council of Ministers of BiH, 2017). Recently, some cantonal forest management enterprises in the FBiH have developed their internal programs to prevent and combat corruption and illegal logging. In 2021 three cantonal forest offices (Una-sana canton, Zenica-doboj canton and Sarajevo Canton) developed action plans for prevention and combat against corruption in forest sector. These programs are mainly based upon the following pillars: formal commitment of public forest companies to prevent and combat with corruption; development and enforcement of internal structures within enterprises for prevention and combat with corruption; development and implementation of mechanisms and instruments for preventing and combating corruption and continuous education and dissemination of information on importance of prevention and combat with corruption (Regional action for combating forest crime and corruption, 2021).

Bosnia and Herzegovina is particularly vulnerable to climate change due to its geographical position, the economic importance of the agriculture and forestry sectors, and the limited adaptive capacity. In recent decades, summer temperatures have increased by 1.2°C in some places, and rainfall patterns have altered. Climate models predict a 2° - 4°C increase in average annual temperatures over the remainder of this century, with summer temperatures rising by as much as 4.8°C. This situation will require fundamental changes to agricultural, forestry and land management methods. The predicted reduction by 30% in annual precipitation and up to 50% in summer precipitation in the Posavina area and in the south of BiH, will have negative implications for agriculture and forestry. These two major sectors of the economy contribute with 12% to BiH's GDP, employ 20% of the workforce, and are critical for rural development. Changes in the precipitation pattern will also have impacts on hydroelectricity, and without adequate adaptation measures the energy demand of the country may not be met. Climate change could affect the forests of BiH in a profound manner, transforming forest ecosystems over time, and altering forest distribution and composition. Some of the forest reserve is more resilient to climate change, although there are still potential impacts. The beech forests, which are largely resilient, could still suffer from pathogens and disease outbreaks, and fire could become a greater risk. The lowland beech forests are at particular risk, especially in low rainfall areas in the northeast of the country. Likewise, low altitude oak forests and high mountain forests are also at risk. Conifers are particularly prone to pest outbreaks in hot temperatures (particularly from beetle attack), as well as from fire risk. Simulations for a 2° C average temperature rise predict significant negative consequences for the distribution of dark coniferous forests. Fir trees are also at risk from increasing temperatures and other species increase their range to higher altitudes. Many tree species, particularly broadleaves, suffer from drought-related stress, and this could have significant impact on many forest species. A particular impact that may occur with climate change is 'multiple stresses', where changes in soil humidity, rainfall, temperature and pathogens all contribute to a hostile environment and high levels of tree mortality. Tree species that are found in the centre of their distribution range will be more tolerant to climate change than those at the periphery (Climate Change Adaptation and Low-Emission Development Strategy for Bosnia and Herzegovina, 2013). In order to adequately adapt on climate change it is necessary to improve or develop suitable institutional frameworks for climate change governance in forestry, and nature conservation needs additional attention, especially in the field of multilevel coordination between different actors and their activities, as well as the acknowledgment of potentially

significant influence the forestry sector might have in climate change governance in FBiH (Nedeljković et al, 2019). FMPs in FBiH are not adequately and sufficiently addressing adaptation to climate change. Except the formal commitment and implementation of measures to implement SFM, detailed actions how to adapt to climate change are not prescribed in the FMP.

The Land degradation neutrality (LDN) process conducted in the FBiH has intensified the interest of key stakeholders and decision makers in land degradation, land conservation and sustainable land management. Opportunities for LDN are reflected through the adoption of the Action Program to combat land degradation and mitigate the effects of drought in BiH as one of the top priorities in creating the basis for the implementation of the defined strategic and operational goals and initiating the update, preparation and adoption of the law to support the integration of the LDN concept. In order to start with the process, an LDN Working Group composed of representatives from the federal and cantonal level institutions, local communities, NGOs, universities, international organizations was established. Experience from FBiH in the implementation of Land degradation neutrality shows that achieving the set LDN goals and measures, in addition to political will, requires legislation, funding sources, social awareness and education about land and its functions in the ecosystem in general; the process also shows a great need for the development of indicators (Čustović and Ljuša, 2018). An example of LDN is presented in the project Decision Support for Mainstreaming and Scaling out Sustainable Land Management (GEF-FAO/DS-SLM) implemented by the public forest company Šume Republike Srpske. Afforestation of bare land in the Herzegovina region, a vulnerable area characterized by Karst landscapes, is an sustainable land management (SLM) technique aimed to increase water-holding capacity and reduce land degradation. The Karst Management Center (under the jurisdiction of the Public Forest company “Šume Republike Srpske” and Ministry of Agriculture, Forestry and Water Management), is located in Trebinje, and manages the forests and forest land of six municipalities in Herzegovina. Every year, as part of the regular forest/karst management measures, bare land is afforested, using plant species produced in forest nurseries of the RS. The most used ones are *Pinus nigra*, *Pinus halepensis* and *Cupressus sempervirens* (WOCAT SLM Database, 2022).

Although there is no systemic approach to the circular economy (CE) in BiH, recently, especially after the adoption of the Green Deal in the EU and the Green Agenda for the Western Balkans, there is an evident increase in initiatives to promote and encourage CE in BiH, including the creation of a strategic-regulatory framework that touches that area. BiH is currently in the process of drafting a series of strategic documents concerning sustainable development, which to a greater or lesser extent contain CE elements that include an integrated energy and climate plan for the period 2021-2030 and the strategy and action plan for the environment 2030+, which will define the goals and policies of the environment in BiH until 2032. It is planned that the mentioned documents will be adopted in the second half of 2022. The preparation of a roadmap for the circular economy in BiH is underway, in which representatives of state and entity institutions, representatives of employers, universities and civil society participate, as the first step in the process of strategic planning in the field of CE in BiH. The road map will be created for the period 2021–2027, and will be based on the strategic direction and successful practices of the EU and the Western Balkan region (Abaspahić et al, 2022).

The tertiary forestry education in BiH is organized at three universities, namely the University of Sarajevo, the University of Banja Luka and the University of East Sarajevo (Agricultural Faculty in Vlasenica). There is an interest in the employees for further professional (post-educational) trainings. Such activities should be implemented in each public forest company and the forest administration offices through internal educational programs, education related to the specific forestry-related issues (Čabarabdić et al, 2011). In 2020, within the Engineering Chamber of the FBiH, the Home Section of Forestry Engineers was formed. The section was founded with the aim of preserving the profession, exchanging information, and transferring experiences in the forest sector. There were no significant activities related to

education and training of forestry professionals from this section so far. Importance and changes in the role of the forest sector in rural development is not adequately emphasized by current educational systems of forest sector in BiH. Practical training, as mechanisms for linking educational programs with current issues in forestry-related topics, both at secondary schools and faculties in BiH, is weak. Lack of knowledge in socio-political and economic aspects of natural resource management is significant shortcoming of forestry professionals in BiH. Cooperation of secondary and higher education institutions and forest management enterprises is not sufficient. Allocation of funds for research in forestry is insufficient and unequally distributed. Financing of post-educational (continuous) trainings in forestry is insufficient and vary from one institution to another (FAO, 2015).

Chapter XII Recommendations

The previous analysis of the forest sector of BiH and FBiH revealed several aspects to be addressed in the future. The priority actions have to be relevant for rural development and in compliance with the EU requirements, because the process of joining to EU is a significant driver of change in forest policy in BiH (FAO, 2015). The following aspects should be addressed in future in order to improve SFM in FBiH:

- The rich forest resources in BiH are currently underestimated and bear a potential for a stronger role in a renewable natural resource strategy. The publishing of new forest inventory data is mandatory for achieving a more accurate planning of mobilizing these resources, where most accurate data are required.
- There are a vast number of areas that are currently not productive or inaccessible. Making them accessible bears the largest potential to increase forest resource use.
- Forests in BiH constitute a major share of environmental resources and are a major space for biodiversity conservation and management, as well as for water and welfare provision. Forest diversity in BiH is extraordinarily rich and requires respective incorporation in forest management planning in a geographically heterogeneous environment. In that context it would be necessary to: support further pilots for future Natura 2000 implementation in forests for different holding size classes, public and private forests and develop prototypes for financing instruments, develop concepts and examine hotspot areas for biodiversity and areas for stronger biomass production in coppice forests, run pilot projects on payment for ecosystem service schemes including contractual nature conservation, eco-tourism, water provision and carbon trading.
- The forest sector is subject to cross-thematic strategies and regulations. To ensure a coherent role in rural development, issues such as forest strategies, energy policies, spatial planning, environmental policies, and rural development strategies, have to be streamlined and harmonized. In that context it would be necessary to foster institutional platforms for strategic forest policy making across entities, support of implementation of a national forest programme.
- To achieve diversification in the forest sector, which is traditionally and almost exclusively oriented on wood, and support rural development, it would be necessary to support the establishment of regional horizontal and vertical marketing platforms of wood products and NWFP and to provide support in marketing and brand creation of end-manufactured wood products and in the production and marketing chain of NWFP.
- Training is a major component of capacity building measures that are required in the forest-based sector in BiH to modernize operation and support compliance with EU and its acquis. This includes trainings at all levels from continuous education, training in cross-sectoral issues of rural

development such as eco-tourism and land management, to a revision of the education of engineers and forest land managers/administrators.

- The EU Timber Regulation imposes severe changes onto the forest-based sector in BiH. Installing institutional structures for certification and collaboration with the sector is essential to guarantee business development with the EU both in the private and corporate sector;
- Coppice forests, many of them in private ownership, need to be specifically addressed in order to bring them back under forest management and make sustainable use of their potential role in both, biodiversity maintenance, but also biomass production;
- Private forest owners manage around 20 percent of the forests in BiH but widely lack capacities and resources to effectively manage their forests. Fostering associations of forest owners and the forest-based industries is needed for a more coherent horizontal and vertical organization of the sector;
- The importance and changes in the role of the forest sector in rural development is not adequately emphasized by current educational systems of the forest sector in BiH. Practical training, as a mechanism for linking educational programs with current issues in forestry-related topics, both at secondary schools and faculties in BiH, is weak. Lack of knowledge in socio-political and economic aspects of natural resource management is a significant shortcoming of forestry professionals in BiH. Allocation of funds for research in forestry is insufficient and unequally distributed.
- Investment needs are identified in: restoration and expansion of the forest road network, investments in modern harvesting and logistics technologies, capacity building in human resources in forest management and administration. Overcoming insufficient law enforcement, political instability, complex dialogue among the entities, corruption and illegal activities such as illegal logging, is deemed essential to attract private investors in the future. Therefore, investments in setting-up institutional/political dialogue and planning in the forest sector may be considered an important pre-requisite for any other investment strategies. Therefore, these investments in capacities, communication, and dialogue are of extreme importance to create an investment-friendly environment for the private corporate sector.

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SUSTAINABLE FOREST MANAGEMENT IN REPUBLIC OF SRPSKA, BOSNIA AND HERZEGOVINA

National Report

National Expert:

Prof. Dr. Dragan Čomić

Chapter I. Abbreviations

CLRTAP	Convention on Long-range Transboundary Air Pollution
EU	European Union
FLEGT	Forest Law Enforcement, Governance & Trade
FMP	Forest Management Plan
FSC	Forest Stewardship Council
GDP	Gross domestic product
GIS	Geographic information system
JSC	Joint stock company
NFI	National Forest Inventory
PEFC	Programme for the Endorsement of Forest Certification
PFE	Public Forest Enterprise
RS	Republic of Srpska
SDG	Sustainable Development Goals
SFM	Sustainable Forest Management
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	UN Framework Convention on Climate Change
WISDOM	The Wood fuels Integrated Supply/Demand Overview Mapping

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Chapter IV. Introduction

Considering broad categories, and according to the official statistical data for the year 2021 (Institute of Statistics of the Republic of Srpska, 2022), the total area of forests and forest land is 1.31 million hectares, or about 53% of the area of the Republic of Srpska, with the distribution indicated in Table 1.

Table 1. The total area of forest and forest land by ownership (ha)

Category of forests and forest land	Total per category (ha)	Percent of total (%)	State forests (ha)	Percent of state forests	Percent of total (%)	Private forests (ha)	Percent of private forests	Percent of total (%)
High forests	575.155	43,91	469.480	46,81	35,84	105.675	34,45	8,07
High degraded forests	16.730	1,28	16.065	1,60	1,23	665	0,22	0,05
Forest cultures	50.742	3,87	49.590	4,94	3,79	1.152	0,38	0,09
Coppice forest	416.458	31,80	223.208	22,25	17,04	193.250	62,99	14,75
Areas suitable for afforestation and management	164.990	12,60	160.564	16,01	12,26	4.426	1,44	0,34
Areas unsuitable for afforestation and management	66.817	5,10	65.202	6,50	4,98	1.615	0,53	0,12
Usurpations	18.893	1,44	18.893	1,88	1,44		0,00	0,00
TOTAL	1.309.785	100	1.003.002	100	76,58	306.783	100	23,42

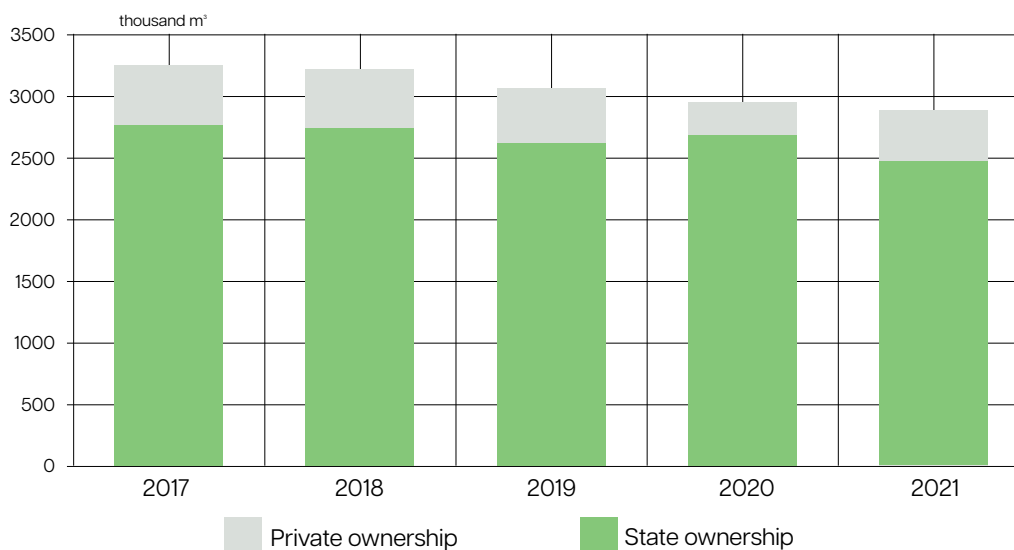
Table 1 shows that about 77% of the total area of forests and forest land is state-owned, while about 23% is private owned. The total area of forest-covered land is 1.06 million ha, of which 0.76 million ha (or about 72%) is owned by the Republic of Srpska, and about 0.33 million ha (or about 28%) is private-owned. It is assumed that the actual forest cover is higher, mainly because private forests are not inventoried on parcels that are not classified as "forest" in the cadastral classification of land. In the past period, significant areas of neglected agricultural land have become covered by forest species. This is primarily a consequence of the decrease in the number of inhabitants in rural areas and the reduced scope of agricultural activities. The average area of forests per inhabitant in the Republic of Srpska is 0.90 ha.

According to the official data for 2021 (Institute of Statistics of the Republic of Srpska, 2022), the total stock in the forests of the Republika Srpska was about 254 million m³, out of which approximately 202 million m³ (about 80%) are state-owned, while 52 million m³ (20%) are private owned. The average volume in high forests with natural regeneration is 324 m³/ha, while the average volume in coppice forests is 128 m³/ha. Conifers participate with 34% and deciduous with 66% in the total volume, and in terms of tree species, the largest share in the total volume is beech with 40%, fir with 15%, spruce with 14%, and oak with 10%. The total annual increment is about 6.5 million m³, out of which about 5.1 million m³ in state forests (79%) and 1.4 million m³ in private forests (21%). Total volume and annual increment, by ownership, are shown in Table 2.

Table 2. Total volume and annual increment, by ownership (m³)

Category of forests and forest land	Total per category (m ³)		State forests		Private forests	
	Stock m ³	Annual increment m ³	Stock m ³	Annual increment m ³	Stock m ³	Annual increment m ³
High forests	187.402.350	4.260.112	161.756.378	3.658.149	25.645.972	601.963
High degraded forests	3.544.834	67.312	3.446.634	64.819	98.200	2.493
Forest cultures	9.769.288	419.471	9.593.478	414.414	175.810	5.057
Coppice forest	53.525.819	1.779.360	27.416.115	1.005.456	26.109.704	773.904
TOTAL	254.242.291	6.526.255	202.212.605	5.142.838	52.029.686	1.383.417

In the period 2017-2021, the average total harvested gross wood volume was approximately 3 million m³ (1.7 million m³ or 55% of deciduous and 1.3 million m³ or 45% of conifers), of which 2.66 million m³ (89%) originated from state-owned forests and 0.34 million m³ (11%) from private ones. An average of about 1.37 million m³ of industrial and technical wood (46%), 0.91 million m³ of firewood (30%), and 0.78 million m³ of residue (24%) were obtained from the mentioned gross wood volume for the same period. Logging classified per the type of ownership is shown in Figure 1.

Figure 1. Logging by the type of ownership (thousand m³)

In the period 2017-2021, an average of 708 ha was afforested/reforested on an annual basis, out of which an average of 110 ha deciduous and 598 ha conifers.

Considering the types of forest stands, the total area of forest-covered land was about 1 million ha, out of which about 0.3 million ha were pure deciduous forests, 0.04 million ha were pure coniferous forests, and the remaining 0.7 million ha were mixed forests. The most represented pure forests are beech, oak and spruce, while the most represented mixed forests are beech-oak-other species, spruce-fir, white-black pine and beech-spruce-fir. The main species in high forests are beech, fir, spruce, pine and oak, while in coppice forests beech and oak are dominant.

2.76% of the territory of the Republic of Srpska, i.e., approximately 68,000, is currently under differ-

ent protection regimes (The RS Institute for the Protection of Cultural, Historical and Natural Heritage, 2022).

Nine basic groups of forest vegetation, 27 subgroups and 169 basic forest types are present on the territory of the Republika Srpska. Most forests (about 60% of the total forest stock of the Republic of Srpska) are located in the mountain zone (1000-1500 m above sea level) dominated by beech and fir forests with spruce (71%), slightly less (about 36%) in the hilly zone (500-1000 m a.s.l.) with the largest share of beech forests (47%), and the least (about 4%) are located in the lowland zone (lower than 500 m a.s.l.) where oak forests dominate on the surface of 95% (Ministry of Agriculture, Forestry and Water Management, 2022).

According to the official data of the Institute of Statistics of the Republic of Srpska (2022), at the end of 2021, 4727 workers were employed in the forestry sector, out of which 1613 were engaged in planting and growing forests, 1847 were employed in forest exploitation and 1267 in other activities. Of the total number of employees, 653 or about 14% were forestry engineers, 1236 or about 26% were professional workers (evocative qualified and highly qualified workers), 1685 or about 36% were forestry technicians, with the remaining 1153 or about 24% of administrative staff.

The total length of forest roads is 7446 km, out of which 6919 are hard truck roads, 398 are soft roads and 129 are modern roads. The openness of forests and forest land in state forests average 9.28 m/ha, which is below the average of the European Union countries. Given that in the Republic of Srpska the trend of forest use is focused on high forests with natural renewal, the expected openness in that category of forests is in the range of 6.52-15.9 m/ha, an average of 11.13 m/ha. In degraded forests 7.46 m/ha, in forest cultures 11.57 m/ha and in coppice forests it is an average of 5.86 m/ha, on the areas suitable for afforestation it is 8.05 m/ha and in forests unsuitable for management it is an average 4.38 m/ha (Ministry of Agriculture, Forestry and Water Management, 2022).

Chapter V. Strategic and legal framework in the Country

Forest management is based on the Law on Forests as of 2008 (Official Gazette of the RS, 75/08), and amendments to the law as of 2013 and 2020 (Official Gazette of the RS, 60/13 and 70/20). This Law defines the provisions that the Forestry Development Strategy of the Republic of Srpska represents the basis for the development of the Forestry Program of the RS, which together with the Action Plan and its implementation should enable the sustainable development and management of forests of all ownership types. The first Forestry Development Strategy of the Republic of Srpska was adopted for the period 2011-2021 (Government of the Republic of Srpska, 2012), and is a document encouraging the development of the forestry sector as a part of economic and rural development for the purpose of employment, protection of the natural environment and forest heritage, restoration of damaged forests, improvement of the ecological, economic and social functions of forests, encouragement of the ecological values of forests and other forest products, provision competitiveness of the wood industry, etc. The Forestry Program has not been drawn up, although it was already defined by the Law on Forests of the Republic of Srpska from 2008. Anyhow, the Forestry Program of the Republic is defined, for the period of twenty years, as a basic document that envisages a participatory, comprehensive, inter-sectoral and permanent process of planning, implementing, monitoring and evaluating forestry policy with the aim of achieving sustainable management of forests of all forms of ownership, together with an Action Plan for its implementation.

Sustainable Forest Management (SFM) is the general goal that guided the preparation of the new Forestry Development Strategy of the Republic of Srpska for the period 2022-2032 (which is in the final stage of development) and implies the use of forests and forest land in such a way and to such a degree that biodiversity is preserved, and that the productivity, regeneration, vitality and potential of forests are at a level that would satisfy the environmental, economic and social needs of present and future generations, both at the local and national level, without endangering and damaging other ecosystems (Ministry of Agriculture, Forestry and Water Management, 2022). During the preparation of the new Forestry Development Strategy of the Republic of Srpska for the period 2022-2032, in addition to domestic legislation and strategic planning documents, the principles, recommendations and obligations arising from international conventions, strategies, initiatives and plans, as well as ratified and signed international agreements and declarations, were also abided by, and in particular:

- Global Sustainable Development Goals (SDG),
- Ministerial resolutions on forest protection in Europe MCPFE-process (Strasbourg, 1990; Helsinki, 1993; Lisbon, 1998; Vienna, 2003; Warsaw, 2007; Oslo, 2011; Madrid, 2015, Bratislava 2021),
- UN Framework Convention on Climate Change - UNFCCC (1992),
- Directive on the preservation of natural habitats and wild fauna and flora (1992),
- Convention on Biological Diversity (1993),
- FLEGT regulation (2003),
- UN Convention on Combating Desertification (1994),
- EU Forestry Action Plan (2006),
- Directive on the Conservation of Wild Birds (2009),
- Bonn Challenge (2011),
- EU Timber Regulation (2013),
- New York Declaration on Forests (2014),
- Sustainable Development Agenda 2030 (2015),
- Paris Agreement (2015),
- UN Strategic Plan for Forests 2017-2030 (2017),
- European Green Deal (2019),
- Network of protected areas for endangered species and habitats in the EU (Natura 2000),
- Policy and regulation of the EU in the field of forestry, environment, and rural development,
- SDG roadmap for the forestry sector (2019) and others.

The Republika Srpska Forestry Development Strategy (2022-2032) was prepared according to the Regulation on Strategic Documents, and in addition to the above-mentioned documents, agreements, and directives, it especially implies compliance with the Spatial Plan of the Republika Srpska until 2025. Within the framework of the new Strategy, the following chapters are covered: Strategic platform; Vision, Mission and strategic goals of Forestry development of the Republic of Srpska; Overview of priorities and measures for the implementation of the Strategy; Key strategic projects; Description of internal and internal compatibility; Framework financial plan; Framework for implementation, monitoring and reporting; Action plan (detailed description of goals, priorities and measures); SWOT analysis and survey.

Chapter VI. Institutional framework in the Country

Following the Law on forests of the Republic of Srpska, forests and forest land owned by the RS are managed by the Ministry of Agriculture, Forestry and Water Management. The Ministry establishes the Council for Forestry to make proposals on important issues in the field of forestry in the Republic, which consists of nine members. The Forestry Council of the Republic of Srpska consists of representatives of the Ministry, other state bodies, institutions and organizations related to the field of forestry, local communities, non-governmental organizations, forest owners and others.

The Government of the Republic of Srpska controls the implementation of the general interest in state forests through the activities of the Ministry and the implementation of the concluded Agreement with the Public Forestry Enterprise "Forests of the Republic of Srpska" JSC Sokolac. The organizational structure of the Ministry is shown in Figure 2.

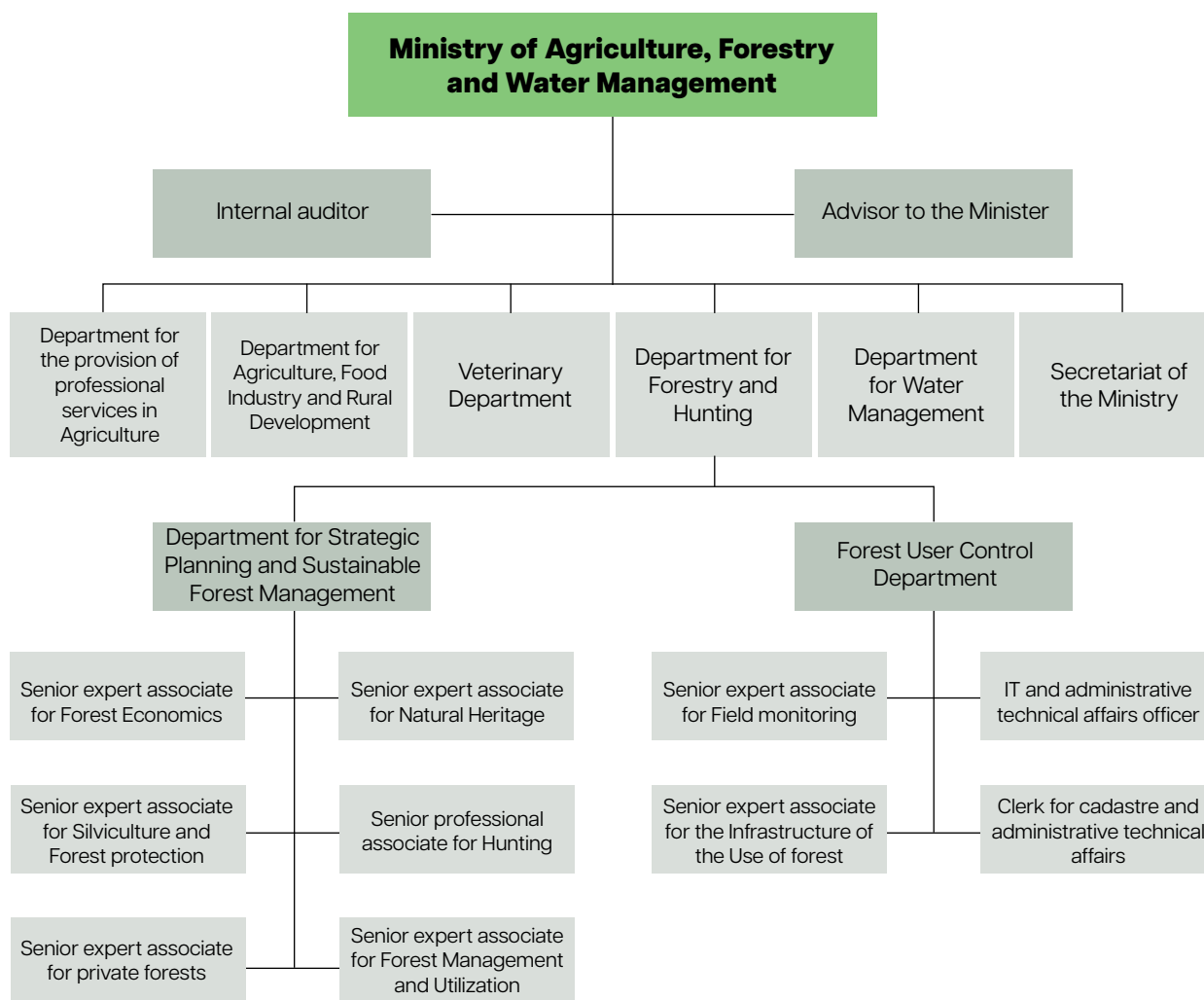


Figure 2. Organisational structure of the Ministry of Agriculture, Forestry and Water Management

The Ministry controls and monitors the works performed by the Public Forestry Enterprise and makes an annual analysis of activities, with a performance evaluation and proposed measures regarding the further use of state forests and forest land, including maintenance obligations. A part of the activities of general interest in the field of forestry is performed by the Public Forestry Enterprise "Forests of the Republika Srpska", whose founder is the Government of the Republic of Srpska. Some forest and forest land management activities (the use of state forests and forest land, including silvicultural and protection activities), Public Forestry Enterprise "Forests of the Republika Srpska" JSC performs following a special contract signed with the Ministry. PFE "Forests of the Republika Srpska" JSC (users of forests and forest land owned by the Republika Srpska) performs its activities through the organizational units shown in Figure 3.

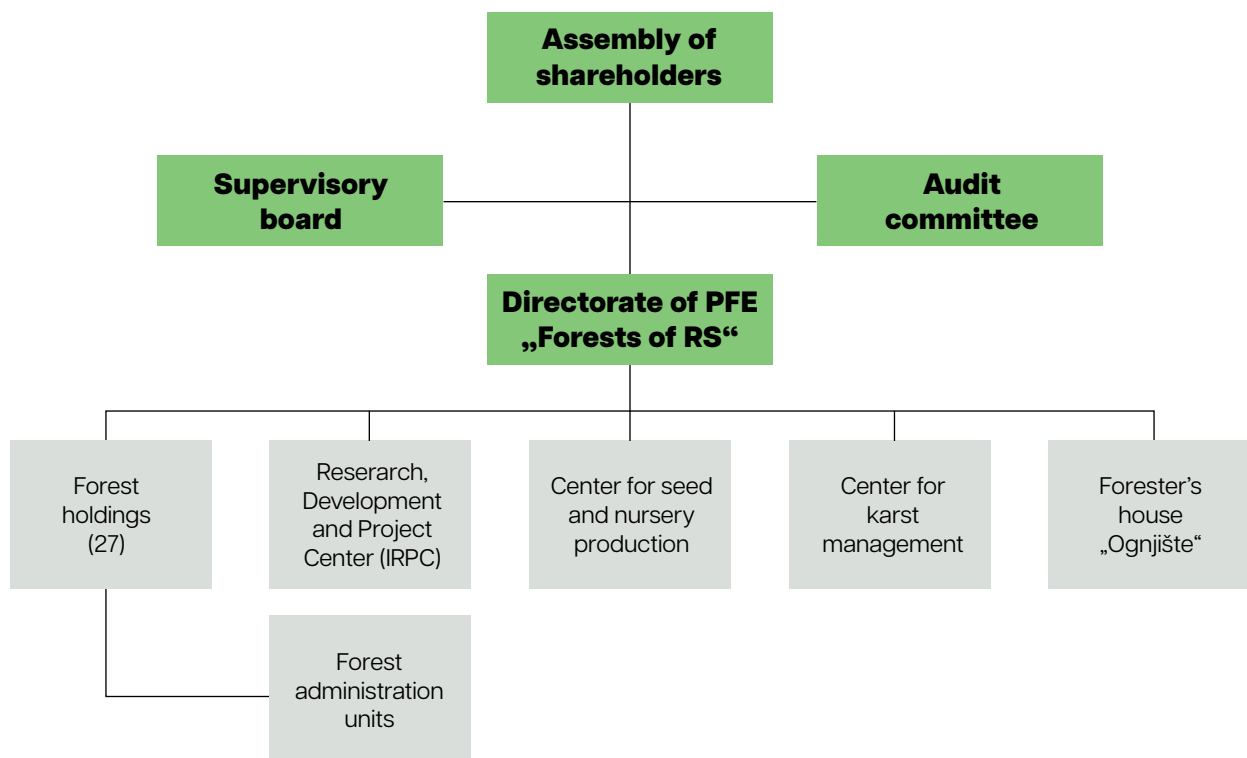


Figure 3. The organizational structure of Public Forestry Enterprise "Forests of Republic of Srpska" JSC, Sokolac

The Inspectorate of the Republic of Srpska is an independent republic administration body performing administration tasks of general importance for the Republika Srpska. It encourages social discipline in the enforcement of laws and other regulations by performing inspection, administrative, professional and other tasks. The Government of the Republic of Srpska monitors the work of the Inspectorate, and the Inspectorate submits an annual report to the Government. The Inspectorate of the Republika Srpska has a total of thirteen republic inspectorates, one of them representing the forestry inspection sector. A forest inspector is in charge of inspections related to compliance with regulations in the field of forests and forestry, hunting, national parks, reproductive material of forest trees and shrubs, and in other administrative areas when thus regulated by a special regulation (Inspectorate of the Republika Srpska, 2022).

Chapter VII. Description of projects related to Sustainable Forest Management (SFM) in the past 5 years

As provided by the representatives of the Ministry of Agriculture, Forestry and Water Management of the Republika Srpska (2022a), some of the most important projects are:

- 1. Measures for redefining the organizational, economic and staff position of PFE “Forests of the Republic of Srpska” JSC Sokolac**, Ministry of Agriculture, Forestry and Water Management of the Government of the Republic of Srpska, 2015. Some of the specific objectives of this project were related to the following: redefining the organizational form and economic position of the forestry sector in the Republika Srpska; improving and more efficient use of available forest resources; defining the concept of production and market linking of forestry, wood processing and transport sector in the Republika Srpska; statutory, procedural and possible legal changes to improve the whole forestry sector; improving the development of the wood processing sector, primarily in increasing the degree finalization of wood products and export orientation; improving the health and quality of forests; support for the implementation of the Forestry Development Strategy of the Republika Srpska.
- 2. Program for the conservation of forest genetic resources of the Republic of Srpska 2013-2025**, Ministry of Agriculture, Forestry and Water Management of the Government of the Republic of Srpska, 2013. The main goal of this project was creating the system for sustainable conservation and use of forest genetic resources, which would represent an adequate connection with the preservation of forest biodiversity. Some of the partial measures were directed towards establishing the preservation of genetic resources as an activity of special interest and its material regulation through legal regulations, together with creating conditions for the development and application of various conservation strategies. Also, one of the goals was the development of databases on all activities on conservation and directed use of forest genetic resources with all the key details.
- 3. WISDOM methodology for consumption of wood and wood fuels in Bosnia and Herzegovina**, FAO BiH, 2016. WISDOM is a GIS-based methodology, which enables the spatial representation of supply and demand for wood fuels. This enables the integration of available information regarding the supply and demand of woody biomass that can be used for energy purposes, at different administrative levels.
- 4. The Master Plan of roads in the Republic of Srpska**, Šuma plan, 2019. This document for the first time comprehensively analyses the use of forests and explains current problems in the area of opening forests, logging, making and transporting forest timber assortments to the end user. This is a long-term document, and it is planned that in the next 30 years the forest holdings within PFE “The RS Forests” will follow the directions of the strategic plan, implement all planned projects for forest truck roads, as well as directions and guidelines for further development of forest sector in the Republika Srpska.
- 5. Technical and technological typification of the forest terrain in the Republic of Srpska**, Ministry of Agriculture, Forestry and Water Management of the Government of the Republic of

Srpska, 2020. Definition of economically sustainable and ecologically acceptable work systems and methods of producing forest wood assortments in different stands and habitat conditions of work in the territory of the Republic of Srpska. The prerequisite for the achievement of this goal is to define the factors according to the rank of importance for the selection of optimal technological solutions in different working conditions.

6. **Master plan of afforestation and management of forest crops**, Faculty of Forestry, University of Banja Luka, 2021. Within the project, the goal is to increase the area of forests to more than 85,000 ha of bare land and shrubs, as well as to improve the condition of forest cultures. Species adapted to the habitat were defined, with the precise determination of planting density and type of planting material, as well as an economic and financial analysis. It is planned to afforest/reforest about 2,000 ha per year, which is more than 2.5 times more than the annual average for the period 2017-2022.
7. **Establishment of the Diagnostic-Forecasting Service**, which is a part of the "Research Development and Project Center" Banja Luka, all within PFE "Forests of the Republika Srpska". This service was founded to preserve and improve the health of forest ecosystems.
8. Following the **Convention on Long-range Transboundary Air Pollution (CLRTAP)**, in the Republic of Srpska **systematic monitoring of the condition of forests** was established in 2014. The Rulebook on Forest Health Monitoring ("Official Gazette of the RS", No. 12/15) imposes the obligation to conduct forest monitoring in the Republic of Srpska, following the internationally accepted methodology. The role of the Coordination Center for monitoring the health status of forests is performed by the Public Forestry Company "Forests of the Republic of Srpska", JSC Sokolac, "Research Development and Project Center", Banja Luka (Law on Amendments to the Law on Forests, Article 9, "Official Gazette of the RS", no. 60/13), which is the National Focal Center for the Republika Srpska. NFC regularly and systematically monitors the state of forests and submits reports on the activities to all relevant institutions.
9. **Natura 2000 Bosnia and Herzegovina** network was proposed, with the definition of areas that could potentially be a part of the Natura 2000 network. 2014
10. **GIS database of the vascular flora of the Republic of Srpska**, 2020. Within the project, taxonomic and spatial identification of the vascular flora of the Republic of Srpska was carried out.
11. **Development of the PEFC National Standard for Sustainable Forest Management in the Republika Srpska/Bosnia and Herzegovina**, UG "Our Forests", 2021. This document is a complementary part of the PEFC forest certification scheme in the Republic of Srpska/Bosnia and Herzegovina and, as such, is a part of the regional PEFC Balkan system. Requirements that are a part of this Standard are compulsory for 1. Forest certification on an individual level, 2. Group forest certification. This standard is applicable at the level of the forest management unit (parcel, owner), or at another level (Municipality Cadastres, Municipalities, Republic of Srpska). Forest managers, forest owners and forest users are responsible for ensuring full compliance of forest management with the PEFC standard, including activities performed by engaged workers in certified forest areas. Forest managers, forest owners and forest users must ensure record-keeping procedures that demonstrate the compliance of forest management with the requirements of the PEFC standard.
12. **Creation of the state-of-the-art information system (GIS and SAP components) for the entire operation of JPŠ "Forests of the Republika Srpska" JSC, Sokolac, 2021**. Within the information system, the most modern GIS subsystem, the Esri ArcGIS platform, is implemented, which is based on the following modules: National Forest Inventory, Forest Management Basics,

Contractor's Project and many other planning documents and tools used in everyday work. With SAP, companies gain insight into profitability, supply chain, products and services by looking ahead to their customers. This solution automates resource-intensive planning tasks, identifies risks and conducts control monitoring to help businesses comply with an increasingly changing regulatory environment. By combining transactions and analytics, SAP enables fact-based and predictive decision-making.

- 13. Creation of an information system for Nature protection for the level of the Republika Srpska, 2021.** Protected areas, list of endemic species of South-eastern Europe, flora of the Republika Srpska, protected species of the Republika Srpska and Red list of the Republika Srpska are defined as modules within the information system.
- 14. Preparation of the Forest Economy Development Project FEDEP** in cooperation with the World Bank, 2022. The project plans significant financial resources for the improvement of the forestry and wood processing sector in terms of modernization and increasing competitiveness. The concept of this project is based on increasing contribution of the sector to economic development and better paying jobs, particularly in rural areas of the Republic of Srpska, in particular by improving the performance and competitiveness of the wood processing industry and modernizing and increasing the sustainable production of wood from the Republika Srpska forests. (Some of the potential activities include opening and reconstruction of forest roads, afforestation, thinning, modernization of mechanization, support to the wood processing sector, modernization of wood sales methods, Competence center for forestry and wood processing, etc.)

Some other significant projects:

- Planning of forest management in conditions of increased risks caused by the drying of forests, 2015.
- Research on patterns of forest drying in the territory of the Republic of Srpska, 2015.
- Differential rent in the forestry of the Republika Srpska, 2015.
- Production of planting material using new methods and techniques, 2015.
- Study of the genetic structure of natural populations of Pančić spruce, 2015.
- Production of volume and assortment tables for oak in the Republika Srpska, 2016.
- Testing of fast-growing poplar clones for biomass production and testing of the highest quality oak provenances with the aim of reintroducing the species, 2018.
- Genetic characterization and assessment of the impact of climate change on Pančić spruce in the Republika Srpska, 2020.
- State of land resources and sustainable management in order to prevent floods, 2021.

Chapter VIII. Implementation of SFM principles in the Country in the preceding period and possible challenges

Through the implementation of the strategic goals defined by the Forestry Development Strategy of the Republic of Srpska, in the 2011-2021 period, the following direct or indirect contribution to the implementation of the SFM principle was made (Ministry of Agriculture, Forestry and Water Management, 2022):

- 1. Forest management based on the Law on Forests (Official Gazette RS, nr. 75/08, 60/13 and 70/20) and regulations (44 regulations).** Article 4 of the Law on Forests defines that forests and forest land are managed following the criteria and principles of sustainable management, emphasizing all the principles of SFM. Intersectoral cooperation influenced by legislative and executive authorities has been significantly improved by the adoption of legal regulations, but it is still not at a satisfactory level of integration.
- 2. The economic contribution of forestry to the social and rural development of the Republic of Srpska has increased,** especially when observing the relationship with the key sector of wood processing. The constant growth of the share of forestry and wood processing in the gross domestic product (GDP) of the Republika Srpska is an important indicator of the achievement of this strategic goal. Forestry to a certain extent applies the principles of the modern circular bioeconomy, especially in the area of biomass production as a renewable energy source. In addition, forests and forest lands represent a significant store of carbon, and intensive efforts are made regarding initiatives such as the use of other forest products, plantation production of fast-growing species, agroforestry, development of hunting and ecotourism. Forestry represents one of the most important economic activities that support rural development, but it is significantly influenced by migration and an increasingly unfavourable demographic structure. Forestry contributed the most by building and maintaining the infrastructure of rural areas, but there is a lack of a stronger connection and affirmation of the common goals of the development strategies of agriculture, rural development, tourism and forestry. The project related to the measures for redefining the organizational, economic and staff position of the PFE "Forests of the Republic of Srpska" JSC was implemented to improve the economic situation and make a greater social contribution to the development of the forestry sector
- 3. Ecosystem management and the protection of biodiversity and nature** are reflected in the Program for the Conservation and Protection of Forest Genetic Resources 2013-2025, the harmonization of biodiversity protection with the Bosnia and Herzegovina Strategy, and the proposal of the Natura 2000 Bosnia and Herzegovina network. Forest genetic resources and reproductive material represent a key segment for the restoration (regeneration) of forests, but also another significant structural indicator of biodiversity that is not sufficiently affirmed in forestry practice, although forests represent an important basis of genetic resources. The potential of biological diversity of forest resources based on the existing inventories indicates that the forest plant and animal life in the Republika Srpska is extremely rich and represents an area of exceptional ge-

netic, species and ecosystem diversity. The assessment of biodiversity was carried out within the framework of individual scientific research, while this type of assessment is not carried out in the process of forest management plans creating.

4. **Polyfunctional planning and forest management** - Forest management planning is based on the need to increase the production base by increasing the volume, with an insufficient affirmation of the multipurpose functions of forests (primarily ecological and social). Increasing forest coverage and forest openness is the goal defined by the Master Plan of Forest Roads (2019). The Master plan of Afforestation and Management of Forest cultures (2021) sets the goal of increasing the area of forests and improving the condition of forest cultures. Within the framework of the Public Forestry Enterprise and the Center for Seed and Nursery Production, technical and technological preconditions were improved by purchasing the most modern equipment for the production of containerized planting material.
5. Significant projects were implemented to improve the health of forests, especially during the gradation of pests and diseases, and the Diagnostic-Forecasting Service was established for monitoring forest health.
6. By applying technical and technological typification within the framework of forest use, conditions are created for the improvement of the production of forest wood assortments, improvement of product quality structure and reduction of production costs.
7. Forest monitoring is improved by applying new technologies and knowledge and applied forest cover detection. The collection of information on the condition of forests and forest land is carried out through field research and remote sensing with satellite images.
8. In forest management, in the area of exploitation and protection needs, new fire roads are maintained. Mapping is carried out according to the risk degree, water intakes, roads, warehouses of firefighting equipment and other elements.
9. PFE "Forests of the Republika Srpska" introduced a state-of-the-art information system, which is also used for the development of forest management operational plans, together with monitoring the economic indicators.
10. The new Rulebook on conditions of use and method of collection of non-wood forest products (Official Gazette of the Republic of Srpska, No. 116/20) was drafted. Greater demand for permits from private entrepreneurs for this type of work has been identified recently.
11. The production of forest wood assortments has fluctuated over the last 10 years, and oscillations occurred occasionally mainly due to natural disasters, but also due to changing trends in the market caused by crises such as the Covid 19 pandemic and the latest crisis caused by the Russian-Ukrainian crisis.
12. **The education and training of private forest owners** as well as the development of the planning system of private forest management to protect forests, but also to increase productivity and quality, has been partially improved, but it can still be improved. While state-owned forests are fully certified in accordance with the requirements of international FSC FM standards, private forests are not. A favourable circumstance is also the fact that the Association of Private Forest Owners "Naša Šuma" from the Republic of Srpska became a PEFC national member for Bosnia and Herzegovina in 2020. In 2021 the PEFC standards for sustainable forest management in the Republic of Srpska/Bosnia and Herzegovina were adopted. Also, the association "Our forest" is, together with PEFC national members from Slovenia and Macedonia, included in the initiative of the PEFC Balkan forest certification system.
13. **Increasing the area of forests of protected natural areas and forests of high protective value** – There are thirty-two protected areas, including three national parks, the Janj virgin forest

as a natural asset of world importance on the UNESCO list, around 68,000 hectares of protected areas, 730 strictly protected and 708 protected species, most of which are directly or indirectly connected with forest ecosystems. In the Republika Srpska, 2.76% of the territory is currently under different protection regimes. Intensive work is being done to set aside new areas of forests of high conservation value, as well as special purpose forests. In addition to the existing national parks "Kozara" and "Sutjeska" (which includes the Perućica rainforest), the "Drina" national park was established in 2017. In 2021, the "Janj" virgin forest was declared a natural asset of world importance by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Nevertheless, the participation of forests of high protection value in the total forest fund is still modest, but in the existing Forest Management Plans a significant area is proposed for allocation and management as a special purpose forest. For the achievement of this strategic goal, forestry had a very significant influence, especially in cooperation with other ministries and institutions (Ministry of Spatial Planning, Construction and Ecology, Institute for the Protection of Cultural, Historical and Natural Heritage of the Republic of Srpska).

14. **Breeding, protection of game and development of hunting and hunting tourism** was achieved by establishing hunting areas in the Republic of Srpska. Significant support from the Government of the RS for the users of hunting grounds was achieved through the financing of hunting projects. An important activity was the adoption of the "Decision on establishing hunting areas in the Republic of Srpska" (Official Gazette RS, nr. 89/15). Game breeding and protection measures (e.g. construction of hunting-breeding and hunting-technical facilities, game feeding, protection from the negative effects of abiotic, biotic and anthropogenic influences) are regularly implemented following hunting principles and annual hunting plans.
15. **Contribution to the development of the wood industry**, new value chains and the market of wood products, was achieved by providing raw materials and supporting greater product finalization. The domestic wood industry is competitive in economically difficult conditions and has a constant increase in the finalization of products and exports to foreign markets. Intensive work is being done to improve intersectoral cooperation through the joint work of several ministries of the Government of the Republika Srpska, PFE "Forests of the Republika Srpska", Chambers of commerce and wood processors. Decision on determining the criteria, conditions and methods of distribution of forest wood assortments (with amendments in 2019) was adopted in 2016, as well as the Decision on defining parameters for determining strategic enterprises in the field of wood processing industry (Official Gazette of the Republic of Srpska, No. 112/18).
16. **Other activities and the use of non-timber forest products** were improved by the reorganization of PFE "Forests of the Republika Srpska" JSC in 2018, with the formation of a special sector for other (non-timber) forest products, which represents the beginning of an organized orientation towards the European trends and greater valorisation and use of non-timber forest products. However, the development of this system requires a more functional organizational structure and initiative both in the forest holdings and among the local population. Some bare forest lands can be more efficiently used for the cultivation of market-attractive plant and animal species.
17. **Education of staff for the implementation of sustainable forest management** and the development of scientific and research work is carried out at faculties and secondary forestry schools. Education has a biotechnical character and consists of fundamental, professional, biological, technical and socio-economic sciences. In addition to sustainability, new trends related to climate change, the development of renewable energy sources and the relationship with forests and wildlife have influenced the reform of forestry education and the introduction of new disciplines. Although the number of vocational schools increased compared to the period ten

years ago, the number of students decreased by 180. There is an increase in the number of faculties and/or study programs in forestry. The development of scientific-research work and the strengthening of intra-sectoral scientific-research cooperation need to be improved through the transfer of scientific knowledge into practice. In addition to high school and academic education, continuous education is not systematically provided, with the exception of the fact that engineers must pass a professional exam in order to obtain a license to perform more complex tasks in practice. Individual, occasional and non-formal educational activities are carried out within the Chamber of Commerce and the Faculty of Forestry, but without a formal systemic approach. In any case, this is an issue that needs intensive work in the near future. Currently, permanent research and demonstration plots for in-site practical training activities (for the purpose of monitoring the effects of management measures, education and so on) have not been systematically established. Individual plots are established, but there is no systemic approach. Guidelines for forest management that is praxis oriented, with explanation of clear target management objectives with proposed measures, were defined in the seventies of the previous century by Professor Matić. These guidelines still find their use, but they should definitely be adapted to the new conditions and modern goals of forest management.

18. **Development of public relations, promotion of forestry and all forest functions at the level of PFE is satisfactory**, but information and promotion of other interested parties and institutions related to forestry are not sufficient, which causes often inaccurate and harmful information, decisions, and messages regarding the sector.

Chapter IX. Areas of possible further development of SFM in the Country

Following previous considerations, some of the main SFM gaps which can be pointed out are:

1. In practice, **the ecosystem approach to forest management** is not sufficiently developed because the general useful functions of forests are neglected and insufficiently valued in planning documents and practice. The priority function of production generally covers a significant number of other functions as well. During the preparation of planning documents, and in accordance with the FSC standards, forests of high protective value are singled out, along with defining other priority functions. Although little progress has been made since 2011 in terms of creating official inventories of present species and their status in RS/BiH, or a suitable system for monitoring biological diversity, a step forward has been made in assessing trends in species from the Red List.
2. **Polyfunctional forest management planning** is not practically represented in the preparation of operational management plans and requires a new approach, especially in the segment of improvement of environmental and social functions of forests. The key lack of development and biological production in forestry is the inadequate application of defined forest management systems, with the occasional disregard for the ecosystem approach. Also, the issue of climate change is not directly addressed in the forest management planning system, and there are no management instructions for practical support regarding this issue.
3. Usage of mechanization within **the framework of forest utilization** is limited by a many factors such as terrain, climate and stands, and the previous approach to forest utilization was not at

a satisfactory level. Forests were opened without previously prepared opening programs, forest truck roads were most often designed and built based on technical and economic aspects, without evaluating other aspects important for sustainable utilization of forests. Also, the choice of work system for forest utilization was done according to an established template, and often without adapting to certain conditions.

4. **Forest biomass**, as a renewable source of energy, was mainly provided from the available mass of firewood in the previous period, but there are still significant amounts of forest residue, up to 30% of the total wood volume, which is still not used.
5. Measures that have not been implemented in the field of **breeding, game protection and development of hunting and hunting tourism** are development of the Strategy for sustainable development of hunting in the Republika Srpska, demining of hunting areas and associated infrastructure, and preparation of a cadastre for the value of hunting areas according to the quality criteria of infrastructure for hunting tourism.
6. **Relationship with the wood industry** – Having no Law on wood processing, higher demand for wood than domestic supply, still low degree of finalization of the production in a large number of companies (around 75% primary, 14% semi-final and 10% final wood processors), insufficient funds for investing in new technologies and innovations, as well as the lack of highly educated workforce in the wood processing sector, are problems that are present in the relations between wood processing and forestry. Progress in improving the relationship between forestry and the wood processing industry was achieved by the adoption and implementation of the Decision on determining the criteria, conditions and methods of distribution of wood assortments (adopted in 2016, with amendments in 2019).
7. The **development and improvement of technology for forest utilization** are not sufficiently represented by contractors. Large damages to the trees, which occur in the first phase of the hauling of wood assortments, are often ignored.
8. **In private forests**, some of the basic problems are related to unresolved property-legal relations, usurpation, a large number of private forest owners and fragmented ownership. Owners of private forests should pay 10% of the value of the assortments for professional-technical services of the Public Forest Enterprise (tree marking and dispatching). On the other hand, owners of private forests, as well as associations of private forest owners, have the possibility (and are regular users) to apply for financing from special purpose funds for forests, which are allocated by the Ministry of Agriculture, Forestry and Water Management on an annual basis. The Ministry has created a guide for private forest owners explaining the assumptions of using and disposing of this resource. Also, the certification of private forest management was not carried out. In addition to the existing FSC standards, a solution is being tried to find out by introducing the PEFC standards, which in some neighbouring countries (Slovenia) have proven to be a sufficiently high-quality solution for private forests. More active action on education, technical assistance promotion of professional knowledge and cooperation of forest owners with different stakeholders is needed.
9. **Protected areas** are not fully financially self-sustainable. Further activities need to be directed towards the preservation and financial self-sustainability of these areas, which implies the need to develop personnel, material and infrastructure capacities that will ensure sustainable management of protected areas, with simultaneous control of use and avoidance of potential conflicts between nature protection and tourism development.
10. Ensuring a **stable source of financial resources** for the forestry sector is a prerequisite for the realization of most of the set goals. In addition to the need to attract funds from various domestic and international funds, it is necessary to ensure the continuity and timeliness of the distribu-

tion of funds for special purposes for forests (extended reproduction) to different users, as well as for the needs of scientific and research work and improvement of the condition of private forests. Although the Law on Forests defines the method of financing the simple and extended reproduction of forests rather well, it is not fully implemented in practice when it comes to investing those funds in the sustainable development of forestry. The above primarily refers to the insufficient return of extended reproduction funds since in the period 2011-2021, less than 20% of the total collected special purpose funds for forests (expanded reproduction funds) directed/returned to the forestry sector (Ministry of Agriculture, Forestry and Water Management, 2022). For efficient and effective standards of sustainable development of forestry, it is necessary to develop mechanisms for managing financial resources intended for the development of the sector. In addition, it is necessary to direct efforts and carry out additional training of staff for the preparation and implementation of project activities (co)financed by grants from international financiers.

11. **Access to finance** is one of the most important problems **faced by entrepreneurs, micro, small and medium enterprises**, which is especially pronounced in countries in transition. To direct the development of the forestry sector towards the leading global trends based on the green economy, it is necessary to enable easier access to financial resources for business entities with strong entrepreneurial initiatives.
12. Given that the forestry sector is considered an important pillar of the European and global **circular bio-economy**, there are not enough initiatives for the development and promotion of the need to create new value chains and "green" jobs in the field of forestry, with a special focus on plantation production of fast-growing species, CO₂ sequestration and the generation of carbon credits, the use of biomass as a renewable energy source, the use of non-wood forest products, ecotourism, etc.
13. **Organization of the forestry sector** - In addition to the fact that significant structural changes have taken place in the forestry sector of the Republika Srpska in the last thirty years, there is still a great need to modernize the sector to achieve real sustainability, competitiveness and inclusion in global markets and trends. To achieve sustainable development, it is necessary to adopt sustainable models of production and consumption with a focus on a low-carbon economy, create new value chains with the creation of new jobs in the sector, ensure the long-term use of ecosystem services of the forest, modernize sales systems, all together with developing a regulatory framework and monitoring the activities of the forestry sector on the way to a green economy.

Following the ranking of priorities within this research, and as agreed with the representatives of the Ministry of Agriculture, Forestry and Water Management (2022a), the target areas for the Forestry sector in the Republika Srpska in the next 10 years according to importance, are as follows:

1. Close to Nature Forest Management
2. Implementation of EUTR/FLEGT Regulations
3. Developing/updating Strategic Framework
4. Developing/updating Legal framework
5. NFI
6. Establishing new/updating existing Organizational framework
7. NATURA 2000
8. Sustainable Forest Management of private forests
9. Introducing/enhancing C&I for SFM into FMP
10. Renewable Energy Directive (RED II/RED III)

Chapter X. Conclusion

Based on considerations within the preparation of the new Forestry Development Strategy of the Republic of Srpska 2022-32, the forestry sector of the Republika Srpska is faced with complex changes in natural and social conditions, which must be taken into account to ensure the development of the sector. The basic and generally accepted principles of forest management are the sustainable development and multifunctionality of forests, and the basic principles of SFM are incorporated into the legal and strategic documents of forestry of the Republika Srpska. For their successful implementation, it is necessary to ensure the balance of the relationship between the diverse needs of society and the functions of forests, as well as the integration of all interested parties, government institutions, the private sector and local communities in the process of implementing activities that contribute to the development of forestry in the Republika Srpska. Forestry, together with the wood industry, is a very important economic branch for the economic development and stability of the Republika Srpska. There are various limitations in the forestry sector due to the complexity of the forest nature (numerous characteristics of forest ecosystems, with an emphasized complementarity, but also an occasional conflict of functions/goals) and the laws related nature (limited productivity, etc). That is the reason why the future development of the sector (greater added value, higher number of employees) primarily depends on the level of knowledge of the complex nature of the forest (especially risk factors), and the development of the wood industry and energy (a wider spectrum of use of wood products and biomass). For this reason, the focus of further activities is on improving the condition of forests, protecting forests from negative abiotic and biotic influences, providing timber and non-timber products, together with providing social and ecological roles of forest ecosystems. It certainly presupposes the adjustment of the organizational and institutional framework, together with the harmonization of the regulatory framework, stable sources of financing and insisting on the strict application of strategic and operational measures.

Forests and forest lands represent very significant natural resources of Republika Srpska, with a total area of forests and forest land of 1.31 million hectares or about 53% of the area of Republika Srpska, of which about 44% represent the highest quality high forests. Forests and forest lands are predominantly state-owned (about 77%), with a forest area per inhabitant in the Republic of Srpska of 0.90 ha. The total stock in the forests of the Republika Srpska is about 254 million m³, of which about 202 million m³ (about 80%) are state-owned and about 52 million m³ (20%) are private owned, with an average volume in high forests with natural regeneration of 324 m³/ha, as well as 128 m³/ha in coppice forests. In five years, the average total volume of gross wood felled is about 3 million m³, of which 1.7 million m³ are hardwoods and 1.3 million m³ are conifers. The main species in high forests are beech, fir, spruce, pine and oak, while in coppice forests beech and oak are dominant. On the territory of the Republika Srpska, 9 basic groups of forest vegetation, 27 subgroups and 169 basic forest types were recorded and currently, 2.76% of the territory, i.e. around 68,000 ha, is under different protection regimes.

Forest management is based on the Law on Forests as of 2008 (Official Gazette of the RS, No. 75/08), and amendments to the law from 2013 and 2020 (Official Gazette of the RS, No. 60/13 and 70/20) and currently, the drafting of the new Forestry Development Strategy of the Republika Srpska for the period 2022-2032 is in the final stage. The new strategy is based on the principles of sustainable forest management. Although it is defined by the Law on Forests of the Republika Srpska as of 2008, the Forestry Program has not yet been developed.

Forests and forest land owned by the Republika Srpska are managed by the Ministry of Agriculture, Forestry and Water Management, and part of the management of forests and forest land (use of forests

and forest land owned by the Republika Srpska, including maintenance obligations) is performed by the Public Forestry Enterprise "Forests of the Republic of Srpska" JSC, on the basis of a special fifty-year contract.

In the previous period, several projects of great importance for the sustainable development and management of forest ecosystems were implemented, and some of them refer to measures for redefining the economic and organizational position of PFE "Forests of the Republika Srpska", conservation of forest genetic resources, the master plan of roads, technical and technological typification of the terrain, master plan of afforestation and management of forest cultures, the establishment of the Diagnostic-Forecasting Service, Development of the FSC and PEFC National Standard, the introduction of the state-of-the-art information system. Many significant projects are being prepared that will advance the application of SFM principles in the forestry of Republika Srpska, and currently one of the most important is the Forest Economy Development Project FEDEP, which is being prepared in cooperation with the World Bank.

The general conclusion is that the application of the SFM concept was improved in the previous period, primarily through forest management based on the Forest Law; by making an economic contribution to social and rural development; partial improvement of ecosystem management, protection of biodiversity and nature; partial improvement of polyfunctional planning and forest management; by intensifying the education of private forest owners; increase in forest areas of protected natural areas and forests of high conservation value; breeding, protection of game and development of hunting and hunting tourism; contributing to the development of the wood industry, new value chains and the market for wood products; partial development of other activities and use of non-timber forest products; by increasing the quality of staff education for the implementation of sustainable management of the sector; partial improvement of public relations, promotion of forestry and all forest functions.

Despite the evident progress, the forestry sector is still burdened with problems of a different nature, some of which relate to:

- **The ecosystem approach** to forest management in practice is not sufficiently developed since the ecological functions of forests are sometimes neglected and insufficiently valued in planning documents and practice.
- **Polyfunctional forest management planning** is not sufficiently represented in practice when creating operational management plans and requires a new approach
- Using mechanization within the framework of forest utilization is limited by a large number of factors (forest openness primarily)
- There are still significant amounts of **forest residue**, up to 30% of the total wood volume, which is still not used
- The relationship with **the wood industry** is followed by the problems caused by not having a Law on Wood Processing, higher demand for wood than the domestic supply, still low degree of finalization of the production in a large number of companies, insufficient funds for investing in new technologies and innovations, as well as the lack of highly educated workforce in the wood-processing sector.
- The development and improvement of **forest utilization technology** are not sufficiently represented by contractors.
- Insufficient effective and efficient use of **private forests**, primarily due to unresolved property-legal relations, usurpation, a large number of private forest owners, fragmentation of private parcels and insufficient information about potentials.
- Expressed need for proclaiming additional, but financially sustainable **protected areas**.

- Often insufficiently stable sources of **financial resources** for the forestry sector.
- **Access to finance** for entrepreneurs, micro, small and medium enterprises.
- Insufficient promotion and focus on the leading global economic trends of the **circular bioeconomy**.
- The need for **reorganization and modernization** of organizations and institutions in the sector, but also the regulatory framework in the forestry sector.

Chapter XI. Recommendations

The recommendations need to be harmonized with the possibility of realizing the strategic goals and priorities of the forestry and hunting sector of the Republic of Srpska, planned for implementation by 2032 (Ministry of Agriculture, Forestry and Water Management, 2022). In this sense, the recommendations are oriented towards the following goals:

Objective 1: Increasing forest coverage, productivity and quality of forests and increasing contribution to global efforts to mitigate climate change

- 1.1. *Preservation and improvement of forest cover, productivity and quality of forests*
- 1.2. *Improving the production of quality forest seeds and planting material*
- 1.3. *Increasing the area under forest by raising new forests and plantations*
- 1.4. *Adaptive planning of forest management and management in the context of climate change*
- 1.5. *Preservation of forests and improvement of forest protection*
- 1.6. *Prevention of habitat degradation*
- 1.7. *Prevention of illegal activities in the forestry sector*
- 1.8. *Sustainable forest and forest land management according to the principles of SFM, but also FSC, PEFC and other standards*
- 1.9. *Improvement of the system of integral and integrated management planning in forestry*

Objective 2: Improving the multifunctional (economic, ecological and social) benefits of forestry, including improving the living conditions of the population in rural areas

- 2.1. *Increasing productive employment in forestry in rural areas*
- 2.2. *Increasing the valorisation of the main forest products*
- 2.3. *Greater utilization and economic valorisation of other forest products and ecosystem services*
- 2.4. *Development of different types of ecotourism in forest areas*
- 2.5. *Improvement of game management*
- 2.6. *Increasing income from hunting and hunting tourism*

Objective 3: Preservation of biodiversity, increase in the area of protected forests and other special purpose forest areas

- 3.1. *Inventory and monitoring of habitats of plant and animal species and identification of endangered species and habitats*
- 3.2. *Identification of threatened habitats and species in forest ecosystems*
- 3.3. *Increasing the area and developing the management of protected areas and special purpose forests*

Objective 4: Increasing new and additional financial resources from all sources for sustainable forest management and strengthening education, scientific and technical cooperation and partnerships

- 4.1. Sustainable use of forest resources
- 4.2. Improvement of the technical and technological aspects of forest use
- 4.3. Recovery and economic revitalization of forestry
- 4.4. Modernization of the forestry sector by focusing on the green and circular bioeconomy
- 4.5. Education and training of personnel in the field of forestry and hunting
- 4.6. Strengthening research capacities in the field of forestry and hunting

Objective 5: Sustainable forest management including public promotion, international agreements, cooperation, coordination, coherence and synergy with sectors, partner organizations and relevant actors related to forestry at all levels

- 5.1. Strengthening public awareness of the importance of forestry and hunting, and the consequences of climate change and other risks to forest management
- 5.2. Cooperation and synergy of relations with the wood industry and other sectors
- 5.3. Improving the institutional and legislative environment for the development of forestry
- 5.4. Coordination of activities at the national and international level

As a basis for the realization of the stated goals, it is necessary to:

- Provide a functional regulatory (strategic and legislative) framework, harmonized with complementary sectors and applicable in practice, ensuring strict application and transparency of work.
- Strengthen institutional capacities, with an assessment of the previous and, if necessary, further reorganization of the forestry sector
- Provide stable and continuous sources of financing for the entire sector, focusing on domestic and international financiers/funds.
- Strengthening of personnel resources for all activities in the sector, with the development of capacities for the application of good foreign practices.
- Insist on the regular collection and analysis of quality data, as a prerequisite for the development and implementation of planning documents for the silviculture, protection and sustainable use of forest ecosystems
- Strengthen communication and coordination with complementary sectors, domestic and international organizations, while providing access to information to all interested parties.
- Modernization of the entire sector, with the application of integrated information systems and orientation towards the concept of the green economy.
- Intensifying efforts on promoting the importance of forest ecosystems, to gain the support of the general public for the implementation of all key changes in the sector.

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SUSTAINABLE FOREST MANAGEMENT IN KOSOVO*

National Report

National Expert:

Dr. Faruk Bojaxhi

**This designation is without prejudice to positions on the status and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.*

Chapter I. Abbreviations

NFI	National Forest Inventory
FMU	Forest Management Unit
MAFRD	Ministry of Agriculture, Forestry and Rural Development
MESPI	Ministry of Environment, Spatial Planning and Infrastructure
EEA	European Environment Agency
SEE	South-East Europe
FDS	Forestry Development Strategy
AP	Action Plan
SMF	Sustainable Management of Forest
NDS	National Development Strategy
MTEF	Medium Term Expenditure Framework
NFRP	National Forestry and Reforestation Program of Kosovo*
NFHP	National Forest Health Program
SCC	Strategy for Climate Change
PARD	Plan for Agriculture and Rural Development
NAPRE	The National Action Plan for Renewable Energy
MP	Management Plan
NP	National Park
DoF	Department of Forestry
KFA	Kosovo* Forest Agency
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization
KEPA	Kosovo* Environmental Protection Agency
UNMIK	United National Mission in Kosovo*
EEA	European Environment Agency
EION	European Information and Observation Network
MIET	Ministry of Industry, Enterprise and Trade
METI	Ministry of Education Technology and Innovation
KPA	Kosovo* Privatization Agency
MLFT	Ministry of Labour Finance and Transfers

AWPK	Association of Wood Processors of Kosovo*
NAPFO	National Association of Private Forest Owners
CCK	Chamber of Commerce of Kosovo*
NFG	Norwegian Forest Group
IEMS	Integrated Emergency Management System
NFFIS	National Forest Fire Information System
Eco-DRR	Ecosystem-based Disaster Risk Reduction
SUNREED	Sustainable Use of Natural Resources for Environment and Economic Development
SIDA	Swedish International Development Agency
GIZ	Gesellschaft für Internationale Zusammenarbeit

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Chapter V. Introduction

Based on LAW NO. 2003/3⁵ on Forests in Kosovo* article 1 point 1.2, the forests of Kosovo* are defined as a national resource. It shall be managed in such a way as to provide a valuable yield and at the same time preserve biodiversity. Forest management shall also take into account other public interests.

The Law on Forests in Kosovo*, in the general provisions, provides a definition of the terms “forest and forest land” and makes a clear distinction of that does not belong to the category of forest land. This law also regulates the manner of forest management in Kosovo* (privately and publicly owned).

Based on the second National Forest Inventory⁶, the total forest area in Kosovo* is 481,000 ha, or 44,7%, (or about 0.27 hectares per capita) Cropland and grassland classes cover 43,7%, while the remaining, about 12%, belong to the other classes. (Figure 1).



Figure 1. Total area of Kosovo* by land use classes (% and ha)

Kosovo* forests are dominated by broadleaved trees, covering 93% or 449 400 ha. More than half of this forest is considered even aged. Coniferous forests cover almost 5% of the forest area (23 800 ha), and 2% or 7,800 ha belong to the category of mixed forests (Table 1)

Forest composition	Age classes (years)						Total
	0-20	20-40	40-80	81-120	121-160	161-200	
Coniferous	4 600	3 600	11 400	3 400	800	0	23 800
Mixed	200	1 000	4 600	1 200	600	200	7 800
Broadleaved	139 600	157 200	127 800	21 800	2 800	200	449 400
Total	144 400	161 800	143 800	26 400	4 200	400	481 000

Table 1. Forest area by forest composition and age class

A total of 180 800 ha (38%) of Kosovo's forests are classified as privately owned, and 295 200 ha (62%) are classified as public forests. Coppice forests cover 84% of the total forest area. This is a result of extensive harvesting, in particular by short rotation coppice forestry for firewood production (Table 2).

⁵ LAW NO. 2003/3 ON FORESTS IN Kosovo* (rks-gov.net)

⁶ Kosovo*-National-Forest-Inventory-2012.pdf (nfg.no)

Stand origin	Ownership			Total
	Public	Private	Unknown	
Natural seeding	58 400	13 600	1 000	7 300
Planting and artificial seeding	2 000	800	0	2 800
Coppice	229 000	164 800	4000	397 800
Coppice with standards	5 800	1 600	0	7 400
Total	295 200	180 800	5 000	481 000

Table 2. Forest area by stand origin and ownership (ha)

Growing stock, both in cubic meters and stocking levels (m³/ha), is an important indicator(s) for assessing sustainable forest management. Volumes in this report are given in cubic meter over bark. (Table 3).

Tree species	2002 (volume)	2012 (volume)
Quercus cerris	5 170	4 282
Querus petrea	4 276	3 669
Other quercus sp.	129	1 292
Fagus sp.	15 963	18 524
Other broadleaves	3 704	6 750
Undefined broadleaves	5 983	0
Abies alba	1 577	1 573
Picea abies	1 402	1 840
Pinus sp.	2 018	2 502
Other conifers	223	77
Total volume	40 445	40 508

Table 3. Growing stock in forest by main tree species (dbh >= 7 cm) (1 000 m³)

Average standing volume in the forests of Kosovo* is 84 m³/ha. In Europe in overall, average standing volume is 105 m³/ha, which is lower than the world average of 130 m³/ha. Some Central European countries have forests with high productivity with standing volume up to 250 m³/ha.

Annual increment of trees with dbh >= 7 cm almost balances the annual harvesting which has been calculated to be around 1.56 mil. m³ vs. 1.60 mil. m³. While the possibility of cutting (utilization) is 80% of the annual growth.

Not all forest management units (FMUs)⁷ have management plans. About 82% of public forests are covered by management plans. Currently, private forest owners do not prepare management plans for their forests. The average size of a private forest is about 1.4 ha.

Chapter VI. Strategic and legal framework in the country

Legislation

Forestry activities are carried out according to Law no. 2003/3 on Forests (14.10.2004), while the Ministry of Agriculture, Forestry and Rural Development (MAFRD) is in the process of drafting a new law on forests. Law 03/L-153 on amending Law on forestry 2003/3.

In 2012, the Ministry of Environment, Spatial Planning and Infrastructure (MESPI) approved two laws related to forests: Law No. 04/L-087 on the national park Sharri⁸ and Law No. 04/L-086 on the national park Bjeshkët e Nemuna⁹.

Based on the results of the survey carried out as part of the study on establishing starting points and indicators for the legality of forest use, most institutions think that the Law on Forests is not clear enough and should be changed. During the discussions, special attention is paid to the sharing of responsibilities and mandates between local authorities (municipalities) and central level institutions. It is also believed that the Forest Law is in conflict with many other laws and administrative guidelines. Consequently, the Law on Forests could only be partially implemented.

Kosovo* has made significant efforts over the past years to participate in regional and international initiatives and conventions related to biodiversity and environmental protection, but this process has been constantly laden with political problems. Kosovo* has become a cooperating member country of the European Environment Agency (EEA) together with the other five economies of SEE that are not members of the EU. For political reasons, Kosovo* has not yet ratified any of the international agreements in the field of biodiversity and/or the environment.

There are 45 by-laws (administrative instructions) related to forestry and hunting in different Ministries, and some of them have been amended and supplemented once or twice. In addition to the Constitution and the Law on Forests, there are about 13 laws that are directly or indirectly related to forests.

Policies and Strategies

With the support of the project GCP/KOS/007/SWE implemented by FAO, the Ministry of Agriculture, Forestry and Rural Development (MAFDR), has drafted and approved the Forestry Development Strategy (FDS) and Action Plan (AP) of this Strategy 2021-2030. Members of the working groups and sub-groups were representatives of the main ministries and organizations, that have direct or indirect connection with the forestry sector. The FDS is an important effort to build capacity to address adverse conditions and break current unsustainable practices.

The Forestry Sector Strategy 2021-2030 has been prepared in accordance with the EU Forestry Strategy 2021, to protect Kosovo's forest resources and promote their sustainable management. The 2021-2030 FDS is structured according to the criteria and the SMF approach agreed by Forest Europe. It takes into consideration the future political and socio-economic scenario of Kosovo*, as well as the generation of a theory of change that describes the steps and their connections that will lead to the planned outcome.

The action plan provides a detailed description of the strategic activities that will take place over the 10-year period. This plan defines the period of realization of the projects, the institutions responsible for the realization of the projects, the financial cost of each activity, and the sources of financing for each activity.

8 LAW NO. 04/L-087 ON NATIONAL PARK "SHARRI" (rks-gov.net)

9 LAW NO. 04/L-086 ON NATIONAL PARK "BJESHKËT E NEMUNA" (rks-gov.net)

Kosovo* is in the process of developing the new National Development Strategy (NDS). The existing NDS (2016-2021) was a new approach to development policies. NDS charged the forestry sector to ensure the sustainable use of Kosovo's forests, as well as to prevent their degradation. The NDS clearly indicated that deforestation could bring significant negative economic and social impacts in addition to ecosystem damage.

NDS has also identified as main obstacles, the lack of appropriate forest management plans, as well as the insufficient capacities of the institutions for the sustainable management of forest resources.

The Government program of Kosovo* 2020-2023 foresees the afforestation of bare forest lands, damaged forest surfaces and degraded forests, as well as requires preventive measures and legal and institutional changes that enable the rational use of forests and strengthen the capacities of the Forestry Agency of Kosovo*.

The Medium-Term Expenditure Framework (MTEF) prioritizes the protection of forest resources and emphasizes the urgency of afforestation in new areas. KASH underlines that for environmental, economic and social purposes, a suitable environment must be created through the review and amendment of the existing legislation on forestry.

There is the National Forestry and Reforestation Program of Kosovo* (NFRP) 2018-2027 and the National Forest Health Program (NFHP) 2018-2027. The NFRP aimed to increase Kosovo's forests by 5%, but it has been evaluated as an over-ambitious and difficult to implement program. Meanwhile, the NFHP aimed at improving forest health, but the implementation of the same remains a challenge for the responsible institutions of forest administration and management due to the lack of human capacities and financial means.

The Strategy for Climate Change (SCC) 2019-2028 emphasizes that, the use of natural resources, high population density, uncontrolled constructions on agricultural lands, uncontrolled use of forests, illegal logging, economic and industrial activities, exploitation of minerals (quarries) and the processing industry are the main causes of environmental degradation.

The Plan for Agriculture and Rural Development (PARD), within Measure 5 of Chapter 4, the development of forestry and afforestation, is mentioned as an alternative to the use of agricultural land. The plan states that forestry is an important economic activity in mountain areas and can provide long-term employment opportunities. Private forestry is highlighted as underdeveloped.

The National Action Plan for Renewable Energy (NAPRE, 2011-2020) referred to the Forestry Development Strategy (FDS, 2010-2020) when it says that especially in rural areas, wood remains the most important source of energy for heating. The strategy defines special measures for promoting the use of energy from biomass. This plan estimates that 120 GW/h of energy can be produced annually from biomass (forest waste), simultaneously expressing concern that the realization of such projects is hindered primarily because of the cost.

Recognizing, protecting, preserving and managing the natural values of natural heritage while ensuring the preservation of biological diversity (biodiversity) and public wellbeing are the welcome and traditional missions of national parks. In addition, the specifics of both parks in Kosovo* allow the development of a series of original activities aimed at preserving natural, cultural and landscape values. This ambition is mainly based on positive (synergistic) and friendly guaranteed interaction activities, e.g. between open agricultural areas - herbaceous and a forest environment, etc.

Management Plan-10-year management strategy 2014-2023 on Sharri National Park

This management plan provides a reasoned strategic framework for the long-term management of Sharri National Park, and also a detailed action plan for the management of the national park over the next five years.

Biodiversity strategy and Action Plan 2011-2020

This very important document for biodiversity expired in 2020. The purpose of this strategy was to list all the open issues related to biodiversity in Kosovo*, but also to create a framework of goals and activities and to create better coordination, prioritizing programs and providing strategic approaches for the development of future initiatives.

Chapter VII. Institutional framework in the country

All public forests of Kosovo* are national resources protected by law. Ministry of Agriculture, Forestry and Rural Development (MAFRD) is the highest-level institution for the administration and management of forests in Kosovo*, working through the Department of Forestry and the Kosovo* Forest Agency (KFA). In accordance with the existing legal framework, the Ministry of Environment and Spatial Planning (MESP), as well as the local self-government represented by the Municipalities, have an appropriate place and role in the process of integrated forest management in Kosovo*, and participate in creating of strategy and policy.

Kosovo* Forestry Agency (KFA)¹⁰

The Kosovo* Forestry Agency (KFA) is the implementing agency, responsible for forest management and administration of the forest land in Kosovo*. The KFA, which was established in accordance with UNMIK Regulation No. 2000/27, carries out its functions through six regional offices in Pristina, Peja, Gjilan, Ferizaj, Prizren and Mitrovica. These KFA offices are responsible for drafting annual management plans.

According to the Law on Forests (2003/3 and amendments), the KFA is responsible for issues related to the regulation of forests and forest lands, and for the administration and management of public forest areas and forests in national parks in Kosovo*. Through the KFA, the MAFRD implements legal regulations in terms of forest management in Kosovo*, while through the Forestry Inspectorate it ensures their implementation by all private and state entities in the forestry sector. Forest fire protection is part of all forest management annual plans.

The duties and responsibilities of the KFA are presented below:

- Implements forest legislation and regulations related to the management of forests and forest lands;
- Through inventory, follows the development of forest resources in Kosovo*;
- Examines the submitted applications for issuing permits for timber and non-timber felling and issues permits in accordance with the provisions in force;
- Issues felling permits, selects and marks felling trunks, acknowledges work performed and issues timber transport permits;
- Issues permits for harvesting non-wood products;
- Controls the places of cutting, storage, processing as well as the transport of wood mass;
- Supervises and monitors logging and silviculture works, to ensure compliance with contract requirements under permits, annual operational forest management plans according to work standards.

Department of Forestry (DoF)¹¹:

10 Kosova Forestry Agency - MINISTRIA E BUJQËSISË PYLLTARISË DHE ZHVILLIMIT RURAL (mbpzhr-ks.net)

11 Department of Forestry - MINISTRIA E BUJQËSISË PYLLTARISË DHE ZHVILLIMIT RURAL (mbpzhr-ks.net)

Develops policies and sets the regulatory framework for forest management. It compiles the ministry's 10-year strategy for governing the forestry sector. Duties and responsibilities of the Department of Forestry are related to:

- Implement the legislation and applicable strategies for the forestry sector;
- Supervise the implementation of laws, legal acts, strategies and different projects related to the forestry field;
- Cooperate with governmental and non-governmental organizations as well as with different donors for development of the forestry sector;
- Propose, draft and establish different projects for development of the forestry sector;
- Approve and take decisions for documents, plans and development projects for the forestry sector;
- Organize, process and maintain different forestry statistics;
- Review, support different requests for licensing and issue the license for development of different activities related to forestry,
- Organize and support development of trainings on forests sustainable management and their treatment;
- Supervise implementation of management plans, annual plans of forests, hunting, eco – tourism as well as management and use of other natural resources;
- Supervise implementation of forests treatment with different silviculture measures in cutting, withdrawal, maintenance, systems/erosive protection, afforestation of forest and forest lands;
- Supervise development of hunting season to animals and wild poultry;
- Collect, maintain data for healthy condition of forests, plants, animals and wild poultry;
- Propose measures for protection of forests, forest lands, animals and poultries, biodiversity, landscape, etc.

Ministry of Environment, Spatial Planning and Infrastructure (MESPI)¹²

The Ministry of Environment, Spatial Planning and Infrastructure (MESPI) of Kosovo* is responsible for creation and implementation of general management legislation in the field of environment, water, housing spatial planning and construction. In order to achieve this, the Ministry has set up departments, institutes, a Directorate for National parks and an Environmental Protection Agency. The MESPI also has competences over national parks, covering around 25 percent of the total forest area in Kosovo*.

Kosovo* Environmental Protection Agency (KEPA)¹³.

Based on the Law no. 03/L-025-2009 on environmental protection, with order to monitor the quality and properties of the environment, the MESPI has established the Kosovo* Environmental Protection Agency. It operates under the MESPI, with main focuses on maintaining the quality of air, water, soil and biodiversity, promoting the use of renewable energy resources, and ensuring the sustainable use of natural resources. Under the KEPA, there is responsible departments for the management of national parks.

The main competencies of KEPA include:

- to develop and coordinate the unique information system for environmental monitoring and protection, as well as to collect data on the environment;

¹² <https://mmphi.rks-gov.net/en/home>

¹³ <http://www.ammk-rks.net>.

- to establish and maintain reference centers with databases for environmental monitoring (socio-economic data, environmental pressures, condition and quality of the environment);
- develop procedures for processing the collected data on the environment and their evaluation (modelling, presentation and visual presentation);
- compile reports on issues related to environmental protection such as regions with increased environmental risk;
- assist administrative bodies in developing new forms of environmental protection policy and monitoring the implementation of environmental protection plans and programs;
- to cooperate with the European Environment Agency - EEA which is part of the European Information and Observation Network – EION.

Municipalities

Municipalities have an extraordinary role and responsibility in the field of forest management. The protection of forests and the granting of permits was transferred to the municipalities from the central level, based on the Ahtisaari package in 2010. The municipalities are obliged to send monthly reports to their regional APK office on: illegal logging, timber and confiscated items, forest health, forest fires and other activities, in the forests under their jurisdiction. For this purpose, the municipalities employ forest guards to patrol, preserve and protect the forests.

Other Governmental Institutions which are indirectly connected with the forestry sector

- Ministry of Industry, Enterprise, and Trade (MIET)
- Ministry of Education Technology and Innovation (METI)
- Faculty of Forestry "Ukshin Hoti" University Prizren
- Kosovo* Privatization Agency (KPA);
- Ministry of Labour Finance and Transfers (MLFT)

Non-governmental Institutions

- Association of Wood Processors of Kosovo* (AWPK);
- National Association of Private Forest Owners (NAPFO);
- Chamber of Commerce of Kosovo* (CCK).

Chapter VIII. Description of projects related to Sustainable Forest Management (SFM) in the past 5 years

In the last 20 years there has been a lot of different national and international projects in the forestry sector. Sustainable forest management is a mechanism that requires professional commitment and sufficient human and technical capacity. Kosovo* has problems in satisfying all the needs mentioned above. However, since 2000, various projects have been implemented in Kosovo*, which have had a positive impact on the sustainable management of forests. The projects have been proposed by local institutions, and a number of them have been implemented with the Kosovo* state budget, while a considerable number of projects have been supported by foreign donors. Afforestation of bare surfaces and reforestation are ongoing projects that have been carried out continuously since 2000. These projects are supported 100% by the state budget. The average of forested areas per year in Kosovo*

varies from 250 to 350 ha. In the table below, we have presented the afforestation projects for the last 5 years, including the area and the spent budget.

Afforestation projects during last five years

Year	Surface	Budget	Notice
2017	585	315,210.90	*295 ha maintenance of afforestation
2018	296.65	212,331.24	
2019	376	257,503.78	
2020	235	112,175.00	
2021	276	206,041.70	
Total	1,768.65	1,103,262.62	

Table 4. List of afforestation projects during last five years

Also, the drafting of Forest Management Plans at the level of Management Units, are projects that have been carried out and continue to be carried out in Kosovo* since 2005. This year, the Norwegian Forest Group (NFG) project has drawn up the Methodology for the drafting of management plans, and has implemented management plans for 2 forest management units in Kosovo*. Since that time, these projects have been continuously implemented with support from the state budget. In the table below, we have presented the projects for the drafting of Forest Management Plans for the last 5 years, including the area and spent budget.

Drafting of Management Plans projects, during the last 5 years

Year	Surface	Budget	Notice
2017	17,488.75	50,725.60	
2018	22,032.37	55,206.52	
2019	9,776.92	33,793.24	
2020	10,768	34,363.24	
2021	-	22,908.00	
Total	60,066.04	197,000.00	

Table 5. List of drafting Management Plans projects during the last five years

International projects (last 5 years):

FAO - Support to strengthening sustainable and multipurpose forest management to improve rural livelihoods and address climate change in Kosovo*.

This is a 4-year project with an estimated budget of US \$ 5.3 million, and it's funded by Sweden and the European Union. The main objectives of the project are:

- Component 1. Create enabling conditions for improved timber legality, trade and law enforcement in forest sector
- Component 2: Enhance transparency and strengthen the institutional capacity in good governance and implementation of forest policies, strategies and programs
- Component 3: Introduce MPFM and inclusive forest value chains for poverty alleviation of rural women and men.

JICA - Project on Capacity Building for Disaster Risk Reduction through National Forest Fire Information System (NFFIS) and Eco-DRR (5-year project).

The overall goal of the project is: Integrated Emergency Management System (IEMS) of Kosovo* is

strengthened with developed capacity of government agencies for protection against forest fires and other natural disasters.

Project purpose is: The capacity of government agencies for prevention and reduction of forest fires and some other natural disasters is strengthened with the introduction of National Forest Fire Information System (NFFIS) and Ecosystem-based Disaster Risk Reduction (Eco-DRR).

CNVP- “Sustainable Use of Natural Resources for Environment and Economic Development (SUN-REED)” Kosovo*

It is a 4-year project funded by the Embassy of Sweden in Pristina/Swedish International Development Cooperation Agency (SIDA) (2022-2026)

The expected results of the project are:

- Increasing incomes from sustainably managed private forests with attention to climate change adaptation and biodiversity and engagement in forest product market systems
- Developing a market system for wood biomass (wood chips) to provide incentives for proper forest management and income generation for Private Forest Owners (PFOs), thereby leading to reduced greenhouse gas impacts.

International projects (last 20 years):

- FAO: Emergency phase in forestry sector FAO 2000-2003
 - a) 1st National Forest Inventory in Kosovo* including public and private forestland 2002-2003
 - b) Rehabilitation of forest nursery in Peja
 - c) Capacity building of forestry sector staff and supply with necessary equipment
 - d) Forest legislation and secondary legislation
- NFG: Forest management planning with GIS (Development of new methodology for forest management planning in Kosovo*, capacity building and training, supply with necessary equipment for forest inventory and new technology such as GIS and remote sensing introduced) 2006-2012
- FAO: 2 National Forest Inventory 2002
- USAID: Evaluation of Forest Management in Kosovo’s publicly owned forests
- EU Twinning Project: Further support to sustainable forestry management in Kosovo*
- FAO Project “Supporting the implementation of policies and strategies for forestry in Kosovo*”
 - 1) Development of Forestry Strategy
 - 2) Management plans for municipalities in the north of Kosovo*
 - 3) Laboratory for the Kosovo* Forestry Institute
 - 4) National Reforestation and Afforestation program
 - 5) Identification of the seed stands on Kosovo* forests
 - 6) Identification of the planted areas in Kosovo*
 - 7) Establishing the KFIS (Kosovo* Forest Information System).
- SIDA: Silvicultural treatment of the young forests in Kosovo*
- SIDA: Evaluation of Support to Private and Decentralized Forestry in Kosovo*
- GIZ: Identification and determination of potential areas for the use of non-timber forest products
- General Directorate of Forestry Turkey: Management plan for the treatment of forests with standards for the management unit Prishtina-III.
- Scanagri: Training and education in Forestry
- PM group: Support to sustainable forest management in Kosovo*.

Chapter IX. Implementation of SFM principles in the country in the preceding period and possible challenges

In relation to the Helsinki resolution, Kosovo* have done some improvements in the forest management in order to provide benefits to the future generations also.

There are 6 adopted Pan-European criteria as well as indicators for sustainable forest management. Due to the established principle of permanent forest management, a large part of the requirements stipulated by the criteria and indicators are fulfilled in the country.

Criterion 1: Maintain and appropriately increase forest resources and their contribution to the global carbon cycle

Based on the forest inventory data, the forest areas in Kosovo* have been expanding. During the period of 10 years specifically from 2002 to 2012 Kosovo* has had an area increase of 20,000 ha. The expansion of these surfaces comes mainly from fast-growing tree species, and their seeds are very light-weight and spread over large distances. Among the main species with a large distribution is the birch (*Betula pendula*). The Kosovo* Forestry Agency carries out afforestation projects on bare surfaces, but the percentage of these trees being occupied is worrying (small). Kosovo* has such quite suitable climate and land, so natural regeneration is very high. In the context of logging, Kosovo* has not had an increase of utilization, due to the illegal activities that have occurred, and the incorrect management of forests and forest resources.

Criterion 2: Maintaining the health and vitality of forest ecosystems

The National Forest Health Program 2016-2025 was finalized in 2015. Trainings were held on good practices for the protection of forest health and the implementation of phytosanitary standards in forestry. Forest health publications have been published and distributed in three languages, Albanian, Serbian and English. Permanent test surfaces for "ICP Forests" have been created. Permanent test plots are checked every year, and results from the field are reported by the Forestry Institute of Kosovo*. From the studies and checks carried out, we can conclude that in general, Kosovo* has healthy forests with slight exceptions, where in certain years there may be problems with diseases and pests. In the last two decades, forest fires are the most worrying problems for the forestry sector in Kosovo*.

Criterion 3: Maintenance and improvement of the productive functions of forests (timber and non-timber products)

Forest areas in Kosovo* are dominated by young forests, in recent years'. Good practices are used in the treatment of young forests with rare pre-commercial silvicultural activities. The purpose of applying these silvicultural measures is to increase the quality of the wood and increase its volume. The planning and utilization of high forests in Kosovo* is quite low, due to the fact that almost all areas with high forests (technical wood) are within the boundaries of National Parks, and their economic exploitation is not allowed. The forest infrastructure in the forests of Kosovo* is low, with an average of about 8m/ha. There is a high progress in the cultivation and collection of non-timber forest products. An Inventory of non-timber forest products has also been drawn up by GIZ.

Criterion 4: Maintaining, protecting and increasing the biological diversity of forest ecosystems

Forest ecosystems in Kosovo* have undergone changes in the way how the forests and forest resources are managed. Many forest areas have been the target of uncontrolled logging, affecting the loss and endangerment of rare species. Another negative element that is quite present in Kosovo* is the exploitation of stone and gravel, where mines for the exploitation of stone have been opened in many forest areas. During the realization of professional work in the forest, the workers of the forestry sector try to be extra careful in the protection of rare and endangered species. It would be good for autochthonous species to be planted in the afforestation projects in the coming years, mainly broad live species.

Criterion 5: Maintaining and improving the protective functions of forests (especially soil and water)

Unfortunately, Kosovo* does not have forest areas designated as protective forests for the purpose defined by criterion 5 of the Helsinki resolution. It is recommended that in the future Kosovo* must work on the fulfilment of this environmental obligation. For the Radusha forest management unit, FAO have started to do Multi-Purpose Management Plan, which foresees coverage of this criterion.

Criterion 6: Maintenance of socioeconomic functions and conditions

In Kosovo*, forests are very important resources in the socio-economic context. Based on the geographical position and the climatic conditions that Kosovo* has, the need for firewood for heating, especially during the winter season, is very large, so most of the firewood is provided from the forests within the territory of the country. In terms of the use of timber for industrial wood, the amount of use has dropped significantly since the declaring of the National Parks. Most of the high forests (high quality forests) are inside the national parks, and according to the laws in force, the use of resources for economic purposes within the territory of the protected areas (Parks) is prohibited. Before the 90s, the wood processing industry in Kosovo* was at quite satisfactory levels and organized in large enterprises. Since 1999, the wood processing industry has focused on mini enterprises, but the number of these enterprises is very large. The forestry sector and that of wood processing is very important in the context of providing jobs for the community in Kosovo*. Also, in recent years, the activity in the collection of non-timber forest products and medicinal plants has significantly increased, as an opportunity to employ the community on a seasonal basis.

Chapter X. Areas of possible further development of SFM in the Country

The forestry sector in Kosovo* needs continuous activities and reforms. Although many projects have been realized over the past 20 years, the need for new projects is very high. In the table below, we have presented a list of possible projects that would be necessary for the forestry sector in the next five years.

Nr	Project	Objectives	Threats	Comment
1.	Forest Inventory	The purpose of NFI is to provide information for the government to helping develop the forest sector, to assess forest management sustainability and to fulfil potential international reporting obligations in the land use-, land use change- and forestry sectors.	Very high implementation cost	It's a basic document on forest managing

Nr	Project	Objectives	Threats	Comment
2.	Forest cadastre	Forest Cadastre - Register of the Forestry Fund of Kosovo* (RFPK) is the official register of cadastral data of the national forest fund, organized at the central level, in which all basic information and periodic changes in ownership, real rights, cartographic position, area, volume, etc., accompanied by the geographic information system (GIS), necessary for forest administration and planning.	Insufficient budget from the state	Donations should be requested
3.	Drafting of management plans in the multi-purpose aspect, based on the value chain	The multi-use forest management planning approach (MUFMP) enables the implementation of the principle of sustainable forest management; in simpler terms, the balance of ecological, economic, and socio-cultural values in forestry.	Their correct implementation	It is being implemented in the Radusha Management Unit
4.	Implementation of the national afforestation and reforestation program, based on the National afforestation plan	The increase of forest areas, has a direct impact on the sustainable management of forests	Limited budget	The percentage of seedlings occupancy should be higher
5.	Collection of local seeds and production of seedlings with indigenous local seeds.	This project will guarantee a higher percentage of seedlings in the planted areas	The seeds bought from abroad are not well adapted to the terrain conditions	
6.	Creation of a forest nursery at an altitude above 1000 meters, cultivation of species that are planted in high areas	The seedlings planted in this nursery, will have better opportunities to adapt to the climatic conditions of the high areas.	Finding the right plot	Till now, the percentage of acceptance of seedlings was very low
7.	Training in the selection of logs for cutting, classification according to technical classes, maximizing the extraction of industrial wood	This project will contribute to the preservation of new forests, and their better management	Lack of forest engineers and technical staff	Until now, a high percentage of technical wood is used for firewood
8.	Treatment of young forests	6.000 ha during the three next years. These silvicultural activities will affect the improvement of the quality of forests, and conversion from low to high forest.	Lack of staff, to do the selection of trees	Based on previous practices, these activities were very successful for Kosovo* forestry.

Nr	Project	Objectives	Threats	Comment
9.	Project for the establishment of the sectors and sub-sectors of game management and hunting programme for the Hunting Area of Special Importance "Blinaja".	More diversity values		There is no satisfactory increase in the number of wild animals, because their young can be harmed by other animals.

Table 6. List of project proposals for the next 5 years

Chapter XI. Conclusions

- Combating Illegal activities in forest
- Combating forest fires
- Low budget for the sector
- Lack of technical and human capacities
- Lack of support in the forestry sector
- Problems on participation in International professional organizations
- The usurpation and change of destination of forest lands
- The insufficient forest infrastructure (forest roads)
- Non-inclusion of the forestry sector in support measures – (subsidies & grants, measure 202 for the establishment and protection of forests through IPARD)

Chapter XII. Recommendations

- Empowerment of Forestry Institutions
- Developing other alternatives for heating.
- Establishing of a training/educational centre for forestry trainings
- Transborder cooperation in forest sector e.g., management of forest fires etc.
- Register of Forest and Forestland / Forest Cadastre;
- Forest fires in border zones, co-operation;
- Regional co-ordination and co-operation in the areas of combating effects of global climate changes, against pests and diseases in forest, and Invasive Alien Species;
- Exchange of experiences for Green Agenda for WB;
- Methodology of Forest Inventory and Forest Multipurpose Management Plans;
- Forest Information System;
- Establishment of forest monitoring system in Kosovo* through remote sensing every year to identify any misuse and damage of forests
- Access to Kosovo's international funds such as carbon funds and financing for ecosystem services
- Empowerment of the private sector in professional services in forests and exploitation of forests with long-term contract

SUSTAINABLE FOREST MANAGEMENT IN NORTH MACEDONIA

National Report

National Expert:

Prof. Dr Ivan Blinkov;

Prof. Dr Makedonka Stojanovska

Chapter I. Abbreviations

PENF	Public Enterprise „National Forests“
MAFWE	Ministry of Agriculture, Forestry and Water Economy
LDN TSP	Land degradation neutrality target setting Programme
SSO	State Statistics Office
MOEPP	Ministry of Environment and Physical Planning
PRD	Protection and rescue Directorate
CMC	Crisis Management Center
PI	Public Institution
NAPFO	National Association of Private Forest Owners
NFP	National Forestry Programme
IDP	Reporting-Diagnostic-Prognostic Service
HEF	Hans Em Faculty of Forest Sciences, Landscape Architecture and Environmental Engineering
FIS	Forest Information System
FISE	Forest Information System Europa
IBA	Important Bird Area
IPA	Important Plant Area
PBA	Prime Butterfly Area
KBA	Key Biodiversity Area
PES	Payment for Ecosystem Services
CNF	Closer To Nature Forestry

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Main terms and definitions:

Forest is an area covered by trees. Globally accepted definition of a forest is ‘a land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10%, or trees able to reach these thresholds in situ. ([https://foresteurope.org/wp-content/uploads/2016/08/ SoEF_2020.pdf](https://foresteurope.org/wp-content/uploads/2016/08/SoEF_2020.pdf)).

A forest is a forest ecosystem that exists on forest land overgrown with forest species of trees and shrubs, bare lands immediately next to the forest, as well as other bare lands and meadows inside the forest, forest nurseries, forest roads, seed plantations, firebreaks in forests, windbreaks on an area larger than two acres, as well as forests in protected areas. A forest also consists of young plantations and forest crops with an area larger than two acres, as well as areas that are an integral part of the forest and are temporarily unvegetated as a result of human influence or natural disasters, where natural regeneration has begun. A forest does not mean separate groups of trees and on an area of less than two acres, intermediate trees between agricultural land, plantations of fast-growing tree species, as well as coastal vegetation outside the forest, tree rows and parks in settlements. (**Law on Forests of RNM**).

According to the purpose, the forests in the national legislation are assigned as: a) Commercial/economic; b) Forests with a special purpose (hunting reserves, park forests, memorial forests, for picnics, for science, forests in protected areas according to the law on nature protection); c) Protective forests.

Theoretically, all forests are multifunctional, but the priority purpose is stated in the legislation.

According to the ownership there are a state owned and private owned forests.

If managed sustainably, forests play an indispensable role in climate and biodiversity protection. They protect soils and water resources, provide livelihoods, and contribute to the wellbeing of rural and urban communities. These multifunctions of the forest were recognized at the Conference in Rio de Janeiro in 1992 but were precisely designed at the Ministerial Conference on Protection of the Forests in Europe, now FOREST EUROPE in Helsinki in 1993.

At the Helsinki, conference a resolution to SFM was adopted, defining SFM as “the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems”. It means that the concept of sustainable forest management is based on the idea of fulfilling the ecological, economic, and social functions of forests on a basis which will provide benefits for present generations while not sacrificing the needs of future ones.

Chapter V. Introduction

Natural conditions especially rough relief, steep slopes and climate (precipitations from 450 – 1200 mm) create various soil-climate vegetation zones, various tree species, and together with socio-economic activities in the past, cause different characteristics in current forests. (Figure 1). The last forest inventory was launched in 1979. Nowadays different types of data can be found from various sources. According to the data from the public enterprise „National Forests“(PENF), the Ministry of Agriculture, Forestry and Water Economy (MAFWE) and the State Statistical Office (SSO) in the Republic of North Macedonia, the areas under forests have been constantly increasing over the years. Chronologically speaking, in 1938 we had 615,261 ha, and in 2020 we have 1,001,067 ha (FAO FRA,2020), which is an increase of 63%. This is a result of afforestation, self-growth of abandoned agricultural land and appropriate forestry activities in the past. Forests and forest land cover 39% of the country’s total area.

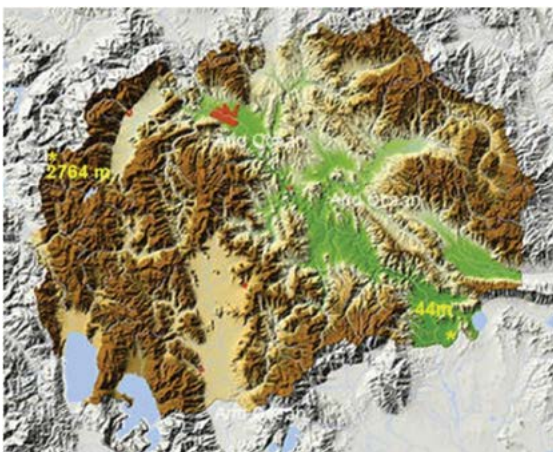


Figure 1 - Relief map

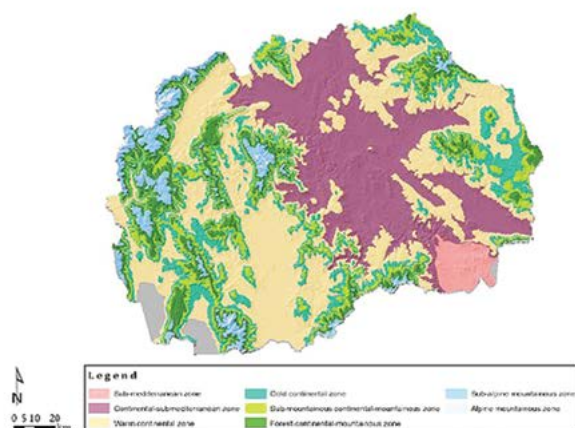


Figure 2 – Soil climate- vegetation zones

According to Filipovski et al. (1996) (figure 2), the forests are spread over 7 out of 8 soil-climate-vegetation zones in RNM as follows: 1) Sub-Mediterranean area at altitudes from 50 to 500 m (8% of the country territory), where mainly thermophilic and xerophilic vegetation of coppice origin develops and is composed of kermes oak (*Quercus coccifera*), pubescent oak (*Quercus pubescens*), white hornbeam (*Carpinus orientalis*), Greek juniper (*Juniperus excelsa*) and black ash (*Fraxinus ornus*); 2) Continental-Sub-Mediterranean area from 500 to 600 m asl (27%), where sessile oak (*Quercus Petraea*) is dominant, but also there are beech stands present where mainly thermophilic vegetation develops, and the forests are made up of pubescent oak (*Quercus pubescens*), white hornbeam (*Carpinus orientalis*) and black ash (*Fraxinus ornus*).; 3) Warm continental area, from 600 to 900 m asl (28%), where thermophilic vegetation develops, in which the Hungarian oak (*Quercus frainetto*) and the Turkish oak (*Quercus cerris*) are dominant. In addition to these, there are also maples (*Acer tataricum* and *Acer monspessulanum*); 4) Cold continental area, from 900 to 1100 m asl (13%) where sessile oak (*Quercus Petraea*) is dominant but there are also beech stands, as well as *Populus*, *Fraxinus* etc., 5) Sub-mountainous-continental-mountain area from 1100 to 1300 m asl (10%), where mesophilic forest vegetation prevails, dominated by beech (*Fagus sylvatica* f. *moesiaca*); 6) Mountain-continental-mountain area from 1300 to 1650 m asl (10%), where mesophilic forest vegetation prevails, dominated by beech (*Fagus sylvatica* f. *moesiaca*); In addition to it, in the 6 and 7 zones there are stands of other species such as: black pine (*Pinus nigra*), Scots pine (*Pinus silvestris*), Macedonian pine (*Pinus peuce*), fir (*Abies borisii-regis*), hornbeam (*Carpinus betulus*), sessile oak (*Quercus petraea*), mountain maple (*Acer pseudoplatanus*) and others; 7) Subalpine mountain area from 1650 to 2250 m asl (4%) where there is: spruce (*Picea abies*), Macedonian pine (*Pinus peuce*), fir (*Abies borisii-regis*), Scots pine (*Pinus mugo*) and subalpine beech (*Fagus sylvatica* f. *moesiaca*) and 8) Alpine mountain area above 2250 m asl where there is no forest vegetation.

Data about the forest area vary depending on the source and especially on the aim and methodology for research and classification. According to the national legislation related to forestry, burned areas, areas where forests were cut, as well as temporary loss of forest cover, areas with some woody vegetation that are assigned to other classifications such as woodland, are included in forest area (Figure 3). According to the latest FAO reports (table 1), the forest area has definitely increased in the last 30 years up to 1,001,067 ha (2020).

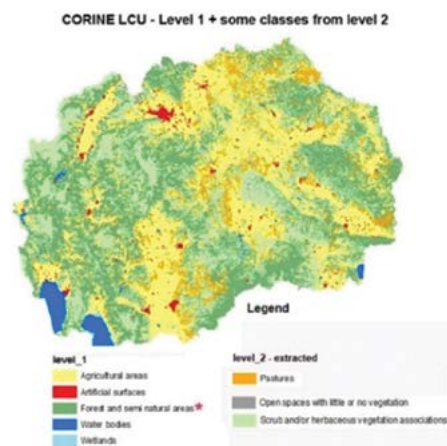


Figure 3 – CORINE LCU

FOREST

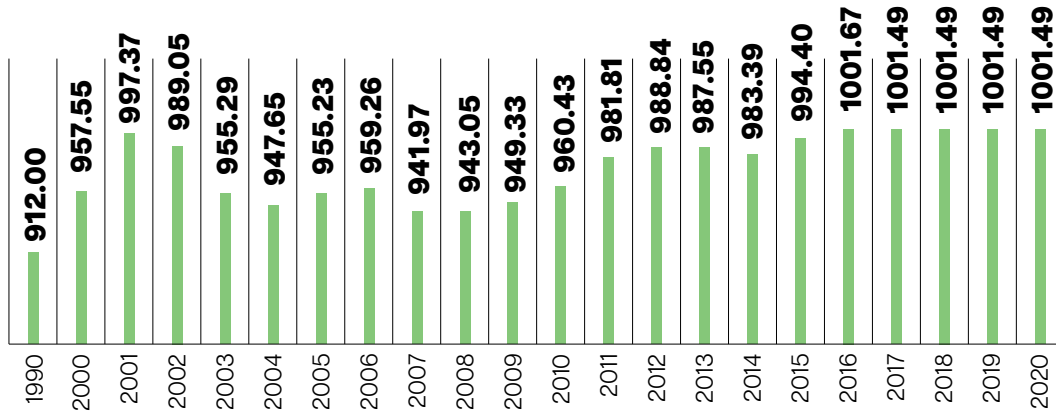
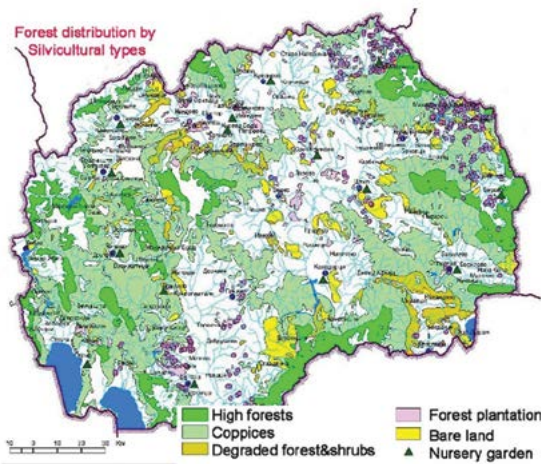


Table 1 - Forest area from 1990-2020 [ha]

Deciduous forests (mainly oak and beech) cover 92% of the forest area, and conifers (mostly pine) about 8%. According to the area coverage, the most represented are pure and mixed oak stands (pubescent oak, Hungarian oak, Turkish oak, sessile oak, Macedonian oak etc.) with more than 50%, while according to the wood mass, the dominant species is beech (>50%).

According to the silvicultural type, forests are divided into generative (high forest), vegetative (low, coppices), bushes and thickets.



Uneven aged high forests (with 221 m³/ha growing stock and annual increment of 4.14 m³/ha) cover 18.43% of the forest area, and growing stock 37.78 of all forests. Even aged high forests with 105.4 m³/ha growing stock and annual increment of 2.24 m³/ha cover 10,59% of the forest area, and growing stock 11.76 of all forests. Coppices (with 47.8 m³/ha growing stock and annual increment of 1.59 m³/ha) cover 61.57% of the forest area, and growing stock 48.58% of all forests. Tickets and brushes cover 9,42% of the forest area. Degraded forest and shrubs cover almost 2/3 of the whole area (Table 2).

Figure 4 - Forests distribution by silvicultural types

Forest by Silvicultural type	Area (% of all forests)	Growing stock (% of all forests)	Growing stock m ³ /ha	Annual increment m ³ /ha
High - Uneven aged	18,43	37,78	221,3	4,14
High - Even aged	10,59	11,76	105,4	2,24
Copiices	61,57	48,58	47,8	1,59
Tickets, bushes...	9,42	1,88	8,5	0,4

Table 2 – Area, growing stock and annual increment by silvicultural types

Various data exist from various official sources. According to the data from the Forest Management Plans (2008), the total forest growing stock is 75,939,573 m³, i.e., 91 m³/ha (European average is 163 m³/ha), and Albania, Spain, Portugal, Greece Cyprus and Malta are weaker than us. The total annual increment is 1,616,782 m³, that is 1.93 m³/ha. The allowed cut is 75% of the increment, but the realization is no more than 70% or 55% of the total increment, which allows for an increase in the wood mass and all ecosystem services from the forests (Table 3). In the Republic of Macedonia, the annual fuel wood demand, is around 800,000 m³. The wood industry processes around 100,000 – 120,000 m³ which comes from the forests, but due to the deficit in resources that Macedonia has in industrial wood from coniferous tree species, the import of wood is much greater than the production in Macedonia.

Year	Technical Wood	Fuel wood	Logging waste	Sum
2000	171	875	102	1148
2001	116	610	66	792
2002	133	602	75	810
2003	142	709	79	930
2004	141	642	62	845
2005	158	600	63	821
2006	162	662	77	901
2007	169	586	77	832
2008	209	646	106	961
2009	138	666	102	906
2010	123	675	73	871
2011	143	636	78	857
2012	127	579	73	779
2013	114	536	41	691
2014	121	495	39	655
2015	126	683	40	849
2016	133	713	44	890
2017	120	644	43	807
2018	121	639	42	802
2019	110	617	32	759
2020	125	572	38	735
2021	120	549	31	700
avg	137	633	63	834

Table 3 – Logging per year

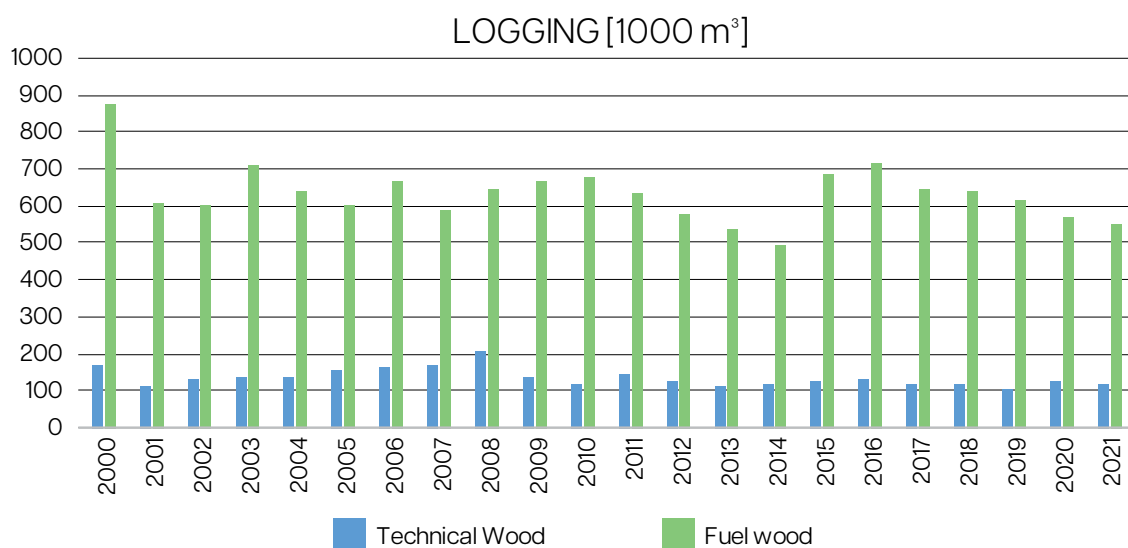


Figure 5 – Logging per year

Aboveground biomass is 71.64 t/ha (total carbon 33.67 t/ha), and underground biomass 19.32 t/ha (total carbon 9.08 t/ha). According to ownership, 89% are forests in state ownership, and 11% in private ownership. In RSM there is 0.54 ha of forest and forest land per inhabitant, an average that is close to the European one, but considering the geographical location and natural conditions in all countries of Southern Europe, the quality of the forest is among the weakest in Europe. (FAO FRA 2020)

According to the purpose, out of all forests, at least 140000 ha are forest with special purpose and most of them are managed by special institutions for managing national parks and multipurpose areas (cca 60%), and 40% by PENF and other subjects, while protective forests are at least 5000 ha (delineation of protective forest is on-going process). Other forests are primary commercial and are managed by PENG and private forest owners. The main characteristics of biodiversity in our country are the richness and heterogeneity of species and ecosystems and the high degree of relativity and endemism. Total number of protected items/locations is 86 and the cover is 357778 ha or 13,92% of the whole area (Figure 6 and table 4). Moreover, North Macedonia's forests provide shelter to 18,009 species of living beings including 3,500 plants and 405 species.

Table 4 – Protected area according to the Law on Nature protection

Categories of protection according to the IUCN	Number of areas	Area [ha]	% from RNM
Ia. Strict Nature Reserve (SNP)*	2*	7787	0,3
Ib. Wilderness Area (WA)	-	-	-
II. National Park (NP)	3	114870	4,48
III. Monument of Nature (MN)	67	78967,5	3
IV. Nature Park (NP)	12	3045	0,12
V. Protected Landscape (PL)	1	108	0,004
VI. Multipurpose Area (MPA)	1	25305	0,98
Total	86	230083	8,9



Figure 6 – Protected areas according to the Law on nature protection

- *With the revalorization of natural values of SNR "Ezerani" and SNR "Tikves" lost their status as IUCN Ia, and are proposed for IUCN III, but a small area within the PA Tikves is proposed for Ib (wilderness area). Final Governmental decision hasn't been adopted yet.*

The autochthonous dendroflora in RNM counts 319 species of trees and shrubs with more than 80 subspecies and varieties within 119 genus and 54 families, and 16% of the total number of species are Balkan endemics or subendemic. According to previous research, forest species of trees and shrubs form 81 forest phytocenoses.

Chapter VI. Strategic and legal framework in the Country

Basic legislation according to which forests and game are managed (managed) are:

- Law on Forests ("Official Gazette of RSM" no. 64/09, 24/11, 53/11, 25/13, 79/13, 147/13 and 43/14). *(This law regulates management of forests, the preservation of forests as natural wealth and forest land, the realization of the public functions of forests, the right and obligations to use forests, financing as well as other issues of importance for forests and forest land according to the principle of biological, economic, social and ecological acceptability. The provisions of this law are applied to all forests and forest land regardless of ownership and purpose). A new law is under construction.*
- Law on hunting ("Official Gazette of RSM" no. 26/09, 82/09, 136/11, 1/12, 69/13, 164/13 and 187/13), *(This law regulates game management)*
- Law on Forestry and Hunting Inspection (Official Gazette of RSM No. 88/2008, 6/10, 36/11 and 74/12); *This Law regulates the principles of inspection supervision, competences, organization of inspection, position, rights and duties of inspectors, procedures of inspection supervision and other issues related to inspection supervision.*
- Rulebook for preparation of forest management plans *(Rulebook on the content of special plans for the management of forests with economic and protective purposes, as well as the method of their preparation, adoption and approval, the content of special plans for the silviculture and protection of forests in protected areas, the method of their preparation, adoption and approval and content of the special plan for the management of forests in private ownership over 30 ha, the method of their preparation, adoption and approval (Official Gazette of RSM" no. 248/19).*

In addition to the mentioned legislation, provisions from other related laws are also eligible:

- Law on Reproductive material from forest tree species (Official Gazette of RSM no. 55/2007 and 148/11)
- Law on Plant Health ("Official Gazette of RSM" no. 29/05; 81/08; 20/09; 57/10; 17/11 and 148/2011)
- Law on Agriculture and Rural Development (Official Gazette of RSM no 49/10; 53/11, 126/12, 15/13).
- Firefighting act ("Official Gazette of RSM" no.67/04, 168/17 – consolidated text)
- Law on nature protection ("Official Gazette of RSM" no. 67/04, 14/06, 84/07, 47/11, 148/11, 163/13, 63/16.)
- Provisions related to management in protected areas, introduction/reintroduction of species; collection of non-wood forest products; usage of protected species etc.
- Law on environment protection ("Official Gazette of RSM" no 53/05, 81/05, 24/07, 159/08, 83/09,

48/10, 124/10, 51/11, 123/12, 93/13, 187/13, 42/14, 44/15, 129/15, 192/15, 39/16),

- Where the most relevant are articles related to preparation EIA and SEA
- Law on water ("Official Gazette of RSM" no 87/08 and amendments) – related to forest activities in erosive areas

The most important strategic document is the "Strategy for sustainable development of forestry 2006-2026". *The main directions are: 1. Enlarging the forest covered area and improving the quality of the forests in accordance with the Spatial plan of the Republic of Macedonia. 2. Multifunctional forest management and sustainable development of economically viable forestry. 3. Increasing the contribution of forests and related goods and services to the quality of life in rural areas. 4. Enhancing the public and social functions of forests and forestry through the strategy for development by comprehensive valorisation of its benefits. 5. Increasing the awareness of the environmental and social values of forests. 6. Improving the conditions for identification of the national and international funds for sectoral development support. 7. Harmonization of the forestry legislation with the national interests and international commitments.* In 2006, the Strategy for Sustainable Development of Forestry was adopted, which foresees the implementation of the concept of sustainable forest management, but in practice this concept has not yet been properly implemented, and its revision is ongoing.

Some of the other most relevant national strategies and plans are the following:

- National strategy for sustainable development in the Republic of Macedonia part I / II (2009 - 30)
- National strategy for nature protection 2017-2027,
- National Biodiversity Strategy and Action Plan 2018-2023
- 4th Fourth National Communication on Climate Change (to be adopted till end of 2022)
- National action plan to combat desertification 2020-2026 plus Country LDN TSP (up to 2030)
- Spatial Plan of the RSM 2000-2020 – new under preparation

Chapter VII. Institutional framework in the Country

The Government of the Republic of Macedonia administers all forests and forest lands through the following institutions:

Ministry of Agriculture, Forestry and Water Economy (MAFWE) www.mzsv.gov.mk,

MAFWE is the main entity in charge of forests, and other entities are the State Advisor for Forestry, the Forestry and Hunting Department, the Forest Police Department and the State forestry and Hunting Inspectorate. Apart from those departments, there are several common department for agriculture forestry and water economy. Within the Forestry Department there are 4 units: Unit for management and harvesting; for silviculture and afforestation; for protection of forests from biotic and abiotic factors; and for game management.

The State Inspectorate of Forestry and Hunting, as a body within the MAFWE, controls and supervises the enforcement of the Law on Forests, the Law on Hunting and all other laws and legally binding acts in the field of forestry and hunting. The Forestry Police, as a department within the MAFWE, protects the forests in accordance with the Law on Forests. Lack of human capacities is a problem. (Figure 7).

Organizational chart of the Ministry of Agriculture, Forestry and Water Economy

Minister >>> Deputy Minister >>> State Secretary State advisor for forestry

Organisational units

Internal audit department – an independent unit
Sector for financial issues
Sector for misdemeanours
Sector for normative legal affairs
Human resources department
Sector for analysis of agricultural policy
Sector for coordination and technical assistance to the cabinet of the Minister
Sector for International cooperation
EU Sector
Sector for viticulture, winemaking and fruit growing
Sector for agriculture
Sector for marketing and quality of agricultural products
Sector for coordination of regional units
Department of Strategic planning
Information Technology Sector
***Sector for forestry and hunting**
***Forest police department**
Sector for consolidation of agricultural land, exchange and identification of land parcels
Sector for rural development

*Constitutive bodies

- Water management administration
- Phytosanitary administration
- State Phytosanitary Laboratory
- Seed and planting Material Administration
- State Inspectorate for Agriculture
- State Inspectorate for Forestry and Hunting

*Sector for forestry and hunting

- Department for forest management and utilization
- Department for forest cultivation and afforestation
- Department for protection of forests from biotic and abiotic factors
- Department for hunting, arranging hunting grounds and giving game for use – concession

*Forest police sector

- Department for professional administrative affairs
- Internal control department
- Departments in regional units (30 forest police stations)

*State forestry and hunting inspectorate

1. Department for professional and administrative affairs in the authority of the State Inspectorate for Forestry and Hunting in Skopje.
2. I - Department for professional and administrative affairs in the authority of the State Inspectorate for Forestry and Hunting in Skopje, Kumanovo, Kriva Palanka and Veles.
3. II - Department for professional and administrative affairs in the authority of the State Inspectorate for Forestry and Hunting in Skopje, Gostivar, Tetovo, Kichevo, Struga and Ohrid.
4. III - Department for professional and administrative affairs in the authority of the State Inspectorate for Forestry and Hunting in Skopje, Prilep, Bitola, Demir Hisar and Macedonian Brod.
5. IV - Department for professional and administrative affairs in the authority of the State Inspectorate for Forestry and Hunting in Skopje, Delčevo, Vinica, Kočani and Berovo.
6. V - Department for professional and administrative affairs in the authority of the State Inspectorate for Forestry and Hunting in Skopje, Gevgelija, Strumica, Kavadarci, Shtip and Radovich.

Figure 7 - Organizational chart of the Ministry of Agriculture, forestry and water economy focused on forestry departments

Ministry of Environment and Spatial Planning (MOEPP)

Competences of the ministry closely related to forests and the forestry sector are: monitoring of the state of the environment; the conservation of biological and geological diversity, national parks and protected areas; and the supervision of inspection in fields within its scope. The State inspectorate for Environment is an independent body.

Protection and Rescue Directorate (PRD) as well as **the Crisis Management Centre (CMC)** are governmental bodies and together with other bodies, have a significant role related to combating mountain hazards previously forest fires.

According to the ownership, forests in RSM can be state-owned or private forests.

State-owned forests are managed by entities appointed by the Government of the Republic of North Macedonia, such as:

- The public enterprise "National Forests" is a centralized enterprise on the national level with headquarters in Skopje and 30 regional offices (figure 6). The model of centralized operation in practice in the PE National Forests faces many problems and difficulties in functioning, therefore a new Law on Forests is in progress, which foresees the transformation of the Public Enterprise and following of new European trends in forestry.
- Public Institutions for the Management of national parks: PI „NP Pelister“, PI „NP Mavrovo“, PI „NP Galichica“, PI „Shar Planina“ ,
- Public Enterprise for management of multipurpose protected area „Jasen“
- Local government units (Skopje, Vevcani, Vinica, Novo Selo...).

Privately owned forests are managed by the owners, natural or legal persons, and some of them are organized in the **National Association of Private Forest Owners (NAPFO)**.

The **Hans Em Faculty of forest sciences, landscape architecture and eco-engineering (HEF)** is the only high-educational institution for forestry in the country. Founded in 1947 as a part of Agricultural-Forestry faculty, by one of the founders of the Ss Cyril and Methodius university in Skopje in 1949. In 1973 the faculty separated from the agriculture department and became an independent faculty. The Forestry institute (founded in 1944) existed up to 1976 when it became part of the Faculty of Forestry. The Department for wood industry in 2010 became an independent faculty. Following contemporary trends in forestry, several great reforms were implemented in the study programs and at the moment 3 study programs are offered: Forestry, Landscape architecture, Eco-engineering and Ecomanagement.

The forests are divided into forest management units (more than 200), and a 10-year plan is drawn up for each forest management unit. After revision, the 10-year plan is approved by the Minister of Agriculture, Forestry and Water Management. The State Inspectorate for Forestry and Hunting is responsible for control over the performed forest activities such as afforestation, cultivation, use, construction of forest roads, protection (against diseases, pests and fires) in accordance with the management plan. Beside PENF, PI NPs are self-financing companies too. What national parks have in common is that they still generate the most income from the sale of wood, except NP Galichica, which started a project with PONT and focuses on the protection and conservation of nature. On the other hand, PE National forests derive almost all of their income from wood products (>95% of income).

The PENF employs a total of 2,200 employees. According to official statistics, about 7,000 people are directly employed in forestry and the forest industry sector. Indirectly, the sector provides job opportunities (part-time jobs) to an additional 35,000 – 40,000 people through multiplier effects.

Chapter VIII. Description of projects related to Sustainable Forest Management (SFM) in the past 5 years (National and International)

“SUPPORT OF FORESTRY POLICY AND LEGISLATION REFORMS IN NORTH MACEDONIA” SIEA 2018 – LOT 1(IPA 2018 Project in progress)

<https://www.developmentaid.org/organizations/awards/view/370588/supporting-the-reforms-in-policy-and-legislation-in-forestry-in-north-macedonia>

The global objective of the project is to facilitate the implementation of EU related strategies, policies, and acquis in order to boost sustainable development of the Forestry sector in North Macedonia. Within the general aim, it is possible to identify specific objectives and priorities: The specific objective of this request for services is to provide assistance to MAFWE to progress in the reforms in the forestry sector including strategic and legal frameworks for sustainable forest management.

The priority issues to be addressed within this call for proposals are exclusively the following ones:

Priority 1. Improving the strategic framework of the forestry sector.

Priority 2. Improving the compliance of forest legislation with the EU acquis and with the requirements on forestry.

In particular, in order to

1. improve the strategic framework of the forestry sector and to 2. improve the compliance of forest legislation with the EU acquis and with the requirements on forestry, the following activities will be delivered:

Activity 1.1: Supporting the update of the long-term Strategy for Sustainable Development of Forestry (SSDF);

Activity 1.2: Supporting the development of the National Forestry Programme (NFP);

Activity 2.1: Supporting the development of a new Forest law based on national specifics and requirements of EU acquis.)

3. National Programme for forestry

“SUPPORT TO FORESTRY REFORMS IN NORTH MACEDONIA” - EU IPA 2019 Project in tender procedure phase <https://etendering.ted.europa.eu/cft/cft-display.html?cftId=10652>

The scope of the project is to provide technical assistance to the Ministry of Agriculture, Forestry and Water Economy and especially to the Forestry Department in order to facilitate the implementation of EU related strategies, policies and acquis in order to boost sustainable development of the Forestry sector in North Macedonia. It is expected to start in early 2023, which will be implementation phase of the activities defined in the IPA 2018 project

THE PROJECT ON CAPACITY BUILDING FOR ECOSYSTEM BASED DISASTER RISK REDUCTION THROUGH SUSTAINABLE FOREST MANAGEMENT IN MACEDONIA (2017-2022)

https://www.jica.go.jp/project/english/north_macedonia/001/index.html

Implementing Agency: Crisis Management Center, Public Enterprise "National Forests", Ministry of Agriculture, Forestry and Water Economy

Overall Goal: By Eco-system based Disaster Risk Reduction (Eco-DRR) measures and activities in synergy with sustainable forest management, disaster risk of floods, landslides, soil erosion and forest fire on a long-term basis is reduced in North Macedonia.

Project Purpose: Eco-system based Disaster Risk Reduction (Eco-DRR) model against floods, landslides, soil erosion and forest fire by utilization of multiple forest function is developed.

Output 1: National Crisis management coordination mechanism among domestic relevant institutions for prevention, early warning and rehabilitation against floods, landslides, soil erosion, and forest fire is enhanced by strengthening and expanding of MKFFIS function through introduction of new modules for torrents, landslides, erosions.

Output 2: National Forest management and planning capacities for promotion of Eco-DRR are enhanced through introduction of new sub-components of protective forests, such as soil erosion prevention, water conservation, and public health forests, by functional categories of forest ecosystem.

Output 3: Execution Capacity to carry out Eco-DRR related activities is enhanced through introduction of Eco-DRR technology and improvement of seedling capacity.

Output 4: Capacity of government personnel and public awareness of local community about the Eco-DRR are improved.

PROMOTING SUSTAINABLE LAND MANAGEMENT THROUGH STRENGTHENING LEGAL AND INSTITUTIONAL FRAMEWORK, CAPACITY BUILDING AND RESTORATION OF MOST VULNERABLE MOUNTAIN LANDSCAPES <https://www.thegef.org/projects-operations/projects/9759>

Implementing agency – UNEP, Executive agency: MOEPP, 2019-2023

Main aim is to develop and strengthen national policy and institutional capacity for sustainable land management (SLM) and to contribute to achieving the national land degradation neutrality target with integrated landscape management in north-western mountainous ecosystems of North Macedonia

Component 1: Strengthened legal and institutional framework and capacity building for SLM

Component 2: Implementation of sustainable land and forest management practices for reducing the effects of land degradation on ecosystem services in three pilot sites in the most vulnerable mountainous regions

Component 3. Knowledge management and public awareness

Bilateral / Regional on-going projects:

"REGIONAL PROGRAM FOR LANDSCAPE FIRE MANAGEMENT IN THE WESTERN BALKANS (2022-2026). <http://www.mzsv.gov.mk/Events.aspx?IdRoot=1&IdLanguage=1&News=2737>

This is a regional project, in its inception phase with a duration of 4 years, financed by the Swiss Confederation. The overall goal of this LFMWB is to increase resilience of Western Balkan forests and landscapes against fires, to benefit the people who depend on these landscapes for their livelihoods and

socioeconomic development. This goal is aligned with the SDC's Framework strategic components: Climate-resilient development and Sustainable management of natural resources. The Programme outcomes are: (1) a lasting regional network established which contributes to cross-boundary knowledge exchange and cooperation in landscape fire management (LFM); (2) Strengthened capacities on broader LFM approaches allow for an effective cross-sectoral collaboration at multiple levels; (3) Revised policies and strategies on LFM are in place to support sustainable landscape management at local, national and regional levels; initiate intersectoral collaboration, improved working approaches, involvement of the community and key stakeholders in the development processes. The project partners are supported in taking the driving seat to ensure the sustainability of the programme interventions on a national, regional, and international level. The LFMWB Programme is establishing strong and trustful national and regional networks for LFM. The objective of establishing the networks is to launch multi-stakeholder policy dialogues, foster better cooperation and strengthen the capacities in the WB region. Furthermore, the programme contributes to encouraging the integration of LFM as an essential part of climate change adaptation and mitigation strategies.

ADAPT: NATURE-BASED SOLUTIONS FOR RESILIENT SOCIETIES IN THE WESTERN BALKANS, IUCN (FUNDED BY SIDA) 2019 - 2022

<https://www.iucn.org/our-work/region/eastern-europe-and-central-asia/adapt-nature-based-solutions-western-balkans>

This regional umbrella initiative works with participating economies, regional and local partners across the Western Balkans to:

1. Increase knowledge and awareness of nature-based disaster risk reduction solutions among decision makers, natural resource managers and local communities;
2. Integrate Nature-based solutions and equitable climate-smart planning into adaptation and disaster reduction policy; and
3. Implement Nature-based solutions for disaster risk reduction and their scale-up.

EU SUPPORT TO FLOOD PREVENTION AND FOREST FIRES RISK MANAGEMENT IN THE WESTERN BALKANS AND TURKEY – IPA FF <https://www.ipaff.eu/about/>

Aligning national legislation with EU legislation and adapting to EU practices in civil protection. Within this context IPA FF objectives under different work-packages include: to improve Partners' capacity to develop Flood Risk Management Plans and develop or strengthen early warning systems procedures for floods at local and central level; to improve capacities for flood risk management at transboundary level; to provide technical support for developing risk assessment and risk management capabilities for forest fires; to establish, equip and train ground forest firefighting modules in line with the Union Civil Protection Mechanism provisions; to develop border crossing protocols and Host Nation Support ("HNS") protocols according to the EU Guidelines on Host Nation Support. The project is structured in two components:

Component 1 – Floods and Component 2 – Forest fires

Soil Erosion and Torrential Flood prevention: curriculum development at the universities of Western Balkan countries – SETOF (Project No. 598403-EPP-1-2018-1-RS-EPPKA2-CBHE-JP)

<https://www.setof.org/> 2018-2022 ERAZMUS+ n, an EU funded project

The main aim of the project is **the development and improvement of curricula for the education of professionals in the Western Balkans** who will solve problems of soil erosion control and protection against torrential floods in compliance with EU directives. The specific objectives of the project are also the following: the implementation of improved knowledge of practical solutions against torrential floods and the education of local governments to create prevention programs.

Significant related to SFM Closed projects in the latest period

PROJECT ON DEVELOPMENT OF INTEGRATED SYSTEM FOR PREVENTION AND EARLY WARNING OF FOREST FIRES

https://www.jica.go.jp/north_macedonia/english/activities/activity04.html

Project objective: Capacity of Crisis Management Center for transmitting information to domestic relevant institutions for prevention and early warning of forest fires and coordinating them is strengthened. Project sites: Skopje; Duration: May 2011 – May 2014

- Executing Organization: Crisis Management Center (CMC)
- Outputs

1) National system for forest fire risk assessment is developed.
<http://mkffis.cuk.gov.mk/index.php?lang=en>

2) National coordination mechanism of information sharing and cooperation among domestic relevant institutions for prevention and early warning of forest fires is reinforced.

GENERATING MOMENTUM ON WATER AND FORESTS IN THE BALKANS (2019-2020)

<https://gembalkans.org/about/>

Funded by Deutsche Bundesstiftung Umwelt (DBU)

Implemented by the Research Institute for Forest Ecology and Forestry (FAWF) as Lead Partner and Connecting Natural Values and People Foundation (CNVP) as Project Coordinator.

The project aims to bring together expertise (practitioners, politicians and other stakeholders) from forestry, agriculture and water management and economics around pilot areas to improve the effectiveness of the forest ecosystem services for water and monetization of ecosystem services. To address the challenges in protection of surface waters and groundwater reserves the project proposes planning models for sustainable forest and watershed management in North Macedonia and Albania. Also, it provides best practices and examples that will ensure forest and watershed management complement to the site conditions and in same time protecting the physical environment and ensuring sustainability of the nature as a whole. Overall goal of the project is to improve the planning practices in forestry by integrating water aspects in the forest management practices in North Macedonia and Albania.

Main activities:

1. Establishment of two pilot sites for integration of water management measures in forestry, one in Macedonia and one in Albania;
2. Harmonization of forest and water strategies with EU standards;
3. Capacity development for forestry planners;
4. Awareness raising.

THE NATURE CONSERVATION PROGRAMME IN NORTH MACEDONIA 2012 – 2020 project of the Swiss Agency for Development and Cooperation (SDC),

<http://www.bregalnica-ncp.mk/about-the-program/?lang=en#:~:text=The%20Nature%20Conservation%20Programme%20in,their%20sustainable%20use%20and%20management.>

Intended to assist the Republic of North Macedonia in the conservation of its outstanding biodiversity and natural ecosystems through promotion of their sustainable use and management. The approach for realisation of the Programme activities is holistic, by including the stakeholders and simultaneous intervention at 3 levels: national, regional, and local.

Phase I of the Programme (November 2012 – December 2016) supported the activities for securing strategic and planning documents which shall assist the sustainable use of land during planning and management with the development of the Bregalnica region, as well as ecological gap analysis and ecological sensitivity map for the Bregalnica river basin.

Phase II of the Programme (January 2017 – December 2020), the activities were focussed towards: a) Capacity strengthening at all levels for efficient implementation of national legislation for nature conservation and integrated management of natural resources; b) Applying a regional approach for nature conservation and sustainable management with natural resources in the Bregalnica region; c) Supporting citizens and SMEs from the Bregalnica region and SMEs of the Bregalnica region to develop offers for environment-friendly tourism activities/services and to sell sustainably produced goods in a socially inclusive way.

ACHIEVING BIODIVERSITY CONSERVATION THROUGH CREATION AND EFFECTIVE MANAGEMENT OF PROTECTED AREAS AND MAINSTREAMING BIODIVERSITY INTO LAND USE PLANNING, GEF – UNEP, 2016-2021

<https://www.thegef.org/projects-operations/projects/5528>

To support the expansion of the national protected areas system and enable capacity conditions for effective management and mainstreaming of biodiversity conservation into production landscapes.

Chapter IX. Implementation of SFM principles in the Country in the preceding period and possible challenges

In relation the Helsinki resolution, the RNM is in on a good path, but still it has to improve the forest management in order to provide benefits to the future generations also.

There are 6 adopted Pan-European criteria, as well as indicators for sustainable forest management. Due to the established principle of permanent forest management, a large part of the requirements stipulated by the criteria and indicators are fulfilled in our country.

Criterion 1: Maintain and appropriately increase forest resources and their contribution to the global carbon cycle

When talking about forest resources increasing, or Criteria number 1, it can be stressed that the forest area is permanently increasing, which is evident, but no concrete analysis has been conducted. According to the historical data from 1914 to 2020, about 250,000 ha of bare lands were afforested (figure 8), but there is no knowledge if they were successful (estimation cac 60-65%). Beside planted forests, the increasing of forests area is a result of overgrowth of abandoned agricultural land (grasslands and arable land) with forest vegetation.

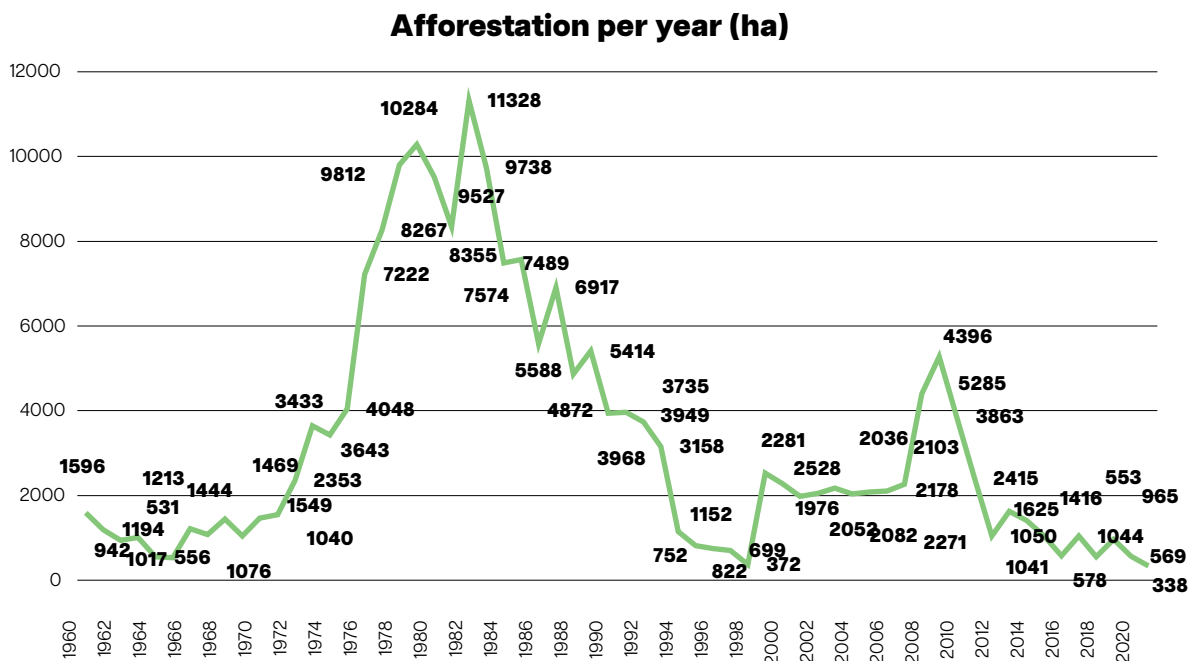


Figure 8 – Afforestation per year from 1960-2021

When it comes to the volume of growing stock, it can be pointed out that there is no exact data although according to FAO from 2000 to 2020 there is a decrease of aboveground forest stock form, but

it is based on general data on a small scale and the methodology of land cover classification. Reasons for decrease of the biomass could be forest fires and cutting, but this is temporary, which means that there is no increasing nor decreasing of the volume of the growing stock, although there is no forest inventory from 1979, thus we cannot compare between these figures. Policy tools have been put in place to reach the objectives related to maintenance and enhancement of forest resources related to this criteria, but it can be stressed that it is only partially fulfilled.

Criterion 2: Maintaining the health and vitality of forest ecosystems

The health condition of the forests is permanently monitored. It is the responsibility of the head of the forest management unit, who is obliged to note any changes in the “forest chronicle” section of the plan. In addition to this, in the event of a mass outbreak of a pest or disease, the Ministry of Education and Culture is informed, as well as the Reporting-Diagnostic-Prognostic Service (IDP) and appropriate measures are taken. During the dry period between 1990-2000, physiological weaknesses of some forest stands were detected, but after this period the situation has slightly improved. Damages are caused by pests, diseases, but the main threat for forests in the country are forest fires that destroy large areas. In the last 22 years, an average of 8300 ha of forests and forest land were burned. Significant part of them have re-established themselves, and there were reforestation efforts on the burned areas. The human factor is crucial for appearance of forest fires. Apart from employees in the Forestry Departments, PRD and CMC, local municipalities and citizens also participate in combating fires.

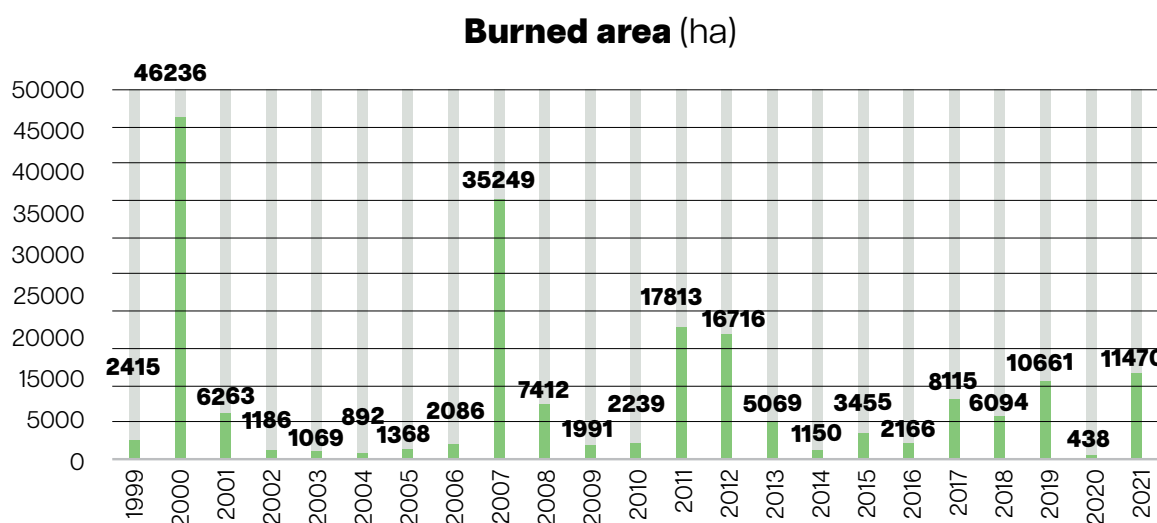


Figure 9 – Burned area in forest fires from 1999-2021

Some soils where forest stands exist are quite poor (e.g., calcomelanosols), somewhere there is high degradation of forest land especially those where the forest cover is low and erosion processes are high.

Criterion 3: Maintenance and improvement of the productive functions of forests (timber and non-timber products)

Maintaining and improving the productive functions of forests for wood products is planned in plans and has been practiced for a long time. Due to the fact that there are many degraded forests and thickets in RNM, it is necessary to intensify activities for their revitalization and improvement. The openness of forests with forest transport infrastructure is low (7.5 km/km²), so this should also be worked in the future. Beside it, quality of forest roads and paths is not satisfactory because more of them are constructed without engineering design and not fulfil technical needs that cause damaging even destroy-

ing of some roads and paths by erosion processes. On the other hand, non-wood products are neglected in commercial forests and not enough attention is paid to them. The maintenance and improvement of non-wood products is planned only in the protected areas.

Criterion 4: Maintaining, protecting and increasing the biological diversity of forest ecosystems

In order to fulfil the requirements of this criterion, considerable work should be done. In the period so far, biological diversity has generally been maintained. Earlier, there was a trend of introduction of allochthonous species, especially conifers, due to the needs and demands of the wood industry. In addition to this, large areas under vegetation were afforested with allochthonous pioneer species for several reasons, primarily due to extreme degraded terrains and engineering requirements (ability to bond the soil with the root system and protection from erosion) but also financially (low cost of production and afforestation, i.e. most optimal cost-benefit). After one rotation is completed (about 100 years) and when the conditions of the habitat are improved, one could think about the reconstruction of the former stands and plantations of native species as modern trends. Regarding the general biodiversity needs, nothing is mentioned within the Rulebook for preparation of forest management plans, so no plans contain chapters on biodiversity. Although the Law on environment protection and its by-laws state that each Forest Management Plan should be accompanied by a SEA (Strategic impact assessment study) no such study has been prepared. The HEF, together with university from Bern, launched a project to improve curricula and include biodiversity in more disciplines.

Criterion 5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably Soil and Water)

Until the Law on forests from 1998 and the establishment of the "National Forests" public enterprise, there were officially 17,617 ha of protective forests in the state (for protection against erosion and sedimentation in reservoirs) that were managed by water companies. By integrating these forests into the existing economic units and passing them under the jurisdiction of the "National Forests" PE, they have lost that status, but from 3 years ago, a process of delineation of protective forests began, which will continue for the next 7-8 years until the completion of the cycle of creating separate plans for all. At the moment there are about 3,000 ha of protected forests and at least 2000 ha in other forests. The world average is around 10% protected forests, and the European average is around 32%. For different types of protective forest (regardless of whether it is for water production, protection from erosion, protection from natural disasters, etc.), different specific forest measures are applied, which requires further training of engineers.

Criterion 6: Maintenance of socioeconomic functions and conditions

If we look at the indicators for Criterion 6, we can say that they are only partly implemented. Regarding ownership, what is missing is data on private companies that are related to forestry (delivery, felling and transport of wood assortments, warehouses for the sale of wood, companies that work with non-wood forest products, sawmills, etc.). The share of forestry in GDP is unknown (estimated 0,3-0,5%). The economic concept of value is that value is human driven (i.e., it is anthropocentric), meaning that goods and services are not considered to have value unless humans place value on. Nowadays forest ecosystem services are not recognized as having economic value.

Data on the workforce, as well as on safety at work are fragmented and incomplete. Data on consumption, trade in wood and wood energy are also lacking. Regarding recreational resources, there is still no data on the number and frequency of people who use the forest for recreation. Objects and locations that have cultural and spiritual values are not even included in the plans, so their number and location are not known.

Chapter X. Areas of possible further development of SFM in the Country

Possible projects are presented in few groups:

- Legal/regulatory frameworks and international commitments
- Information, communication, technology
- Management – engineering related to SFM
- Education and science
- Financial instruments/economic policy

GAP	Project	Aim	Objectives	Comment	
I - Legal/regulatory frameworks and international commitments					
C1 – C6	Insufficient or inappropriate by-laws to fulfil all commitments	Revision of existed regulative framework and introducing new by-laws for SFM Rulebook for preparation forest management plans (revision) - Rulebook/Methodology for preparation forest inventory - Rulebook on the content, method of management, maintenance, and use of the information system in forestry (FIS) - Rulebook for delineation, planning and management in protective forests	Fulfilling of all commitments in sustainable forest management planning	<ul style="list-style-type: none"> - Detailed analysis of gaps in the current Rulebook for preparation of forest management plans with focus on commitments related to biodiversity, climate changes and land degradation and desertification - Preparation of methodology for forest inventory - Analysing of requirements of the Law on national infrastructure of geospatial data - Technical characteristics of needed data - Procedures for uploading/downloading data - Procedure for obligations 	Preparation of new law on forests is an on-going process and all the necessities must be mentioned, so that later they can be regulated in detail
II - Information, communication, technology					
C1 to C6	Data related to forestry is out of date (latest inventory is form 1979) and lack of centralized body for forestry related information	Forest information system	<ul style="list-style-type: none"> - To provide comprehensive information about the state and dynamics of forests for strategic and management planning - to facilitate expert knowledge sharing, research, and innovation through the FIS platform, helping users better understand the complex changes and challenges facing forest ecosystems and their management. - Fulfilling requirements from the Law on national infrastructure of geospatial data 	<ul style="list-style-type: none"> - Analysis of guidelines of FISE (Forest Information System for Europe) - preparation of a data catalogue, documentation, report, tabular data, spatial dataset, data services and databases - Harmonization of datasets and methods with guidelines for NIGSD) 	<ul style="list-style-type: none"> - There is an European forest information system - Each governmental institution is obliged to upload data in the National Infrastructure of geospatial data. (NIGSD)

GAP	Project	Aim	Objectives	Comment	
C6	Bad image of forestry in the public, especially in the media	Sustainable forest management – Communication Plan for forestry activities in the past and current	Improve of the image of forestry	<ul style="list-style-type: none"> - Organize public events to promote methods and activities that forest engineers do in the field - Involve many stakeholders in these events (children, elderly, rural population) - Greater representation in the media (TV, radio, newspaper, internet, ...) 	Almost each forest cutting explodes in the media, especially from environmentalists, as deterioration of nature. Benefits of forest activities are not known. Only some are aware of the many afforested bare lands in RNM that were previously used by protected reservoirs for irrigation from sedimentation and contribute to agriculture/ food production
	Lack of cross-sectoral cooperation and conflicts with MOEPP	Communication plan for cross-sectoral cooperation	Improving cross-sectoral cooperation	Institutional strengthening and capacity building in the line ministries in order to improve their communication	
III - Management – engineering related to SFM					
C1-C6	Current forest management in NRM hasn't fulfilled all needs for SFM	Integration of all criteria for SFM in practice	Upgraded forest management	Involve aspects/activities other than wood (NWF-P's, ecosystem services, recreation...)	Some aspects from SFM are practiced/ implemented, some are not. One such regulation was proposed that contains such criteria for SFM in legislation
C5	Afforestation of bare lands in the latest period is with very low intensity	Long – term afforestation of bare land to face climate changes and desertification	To restore an area that has been destroyed, to reduce the amount of erosion, to mitigate CC and desertification, to improve biomass; to regain ecological integrity and enhance human well-being	<ul style="list-style-type: none"> - Selection of an appropriate tree species the most resistant to drought and aridity, to forest fires - Production of appropriate seedlings - Selection of the most valuable afforestation (species, seedling type, soil preparation, density, scheme, type of planting. Fire prevention measures) - Launching afforestation - Silviculture and protection of new planted forest stands 	Scenarios for CC for RNM are unfavourable. Now 28% of RNM is prone to desertification, and in the near future, up to 2050, probably 50% of the territory would be vulnerable to LDD. In several national documents RNM is committed to afforestation
C2, C5	2/3 of the existing forest area is degraded	Amelioration of degraded forest and shrubs	Improve forest landscape, ecological integrity, increase of biomass		

GAP	Project	Aim	Objectives	Comment	
C3	Non-wood products are almost neglected	Management of NFWP	Determination of NFWP and possibilities for their use in practice	<ul style="list-style-type: none"> - Identification of possible NFWP (distribution and quantities) - Integration into forest management - Cadastre of enterprises dealing with NFWP 	
C4	Lack of good forest management results in practice that destroy forest biodiversity	Advancing biodiversity conservation through integrated forest management	Protecting forest biodiversity	Assessment of the prospects of integrating biodiversity conservation in forest management in an integrated approach.	
C4	Lack of good forest management results in forest fragmentation and loss of birds	Managing forests for birds	Creating favourable conditions for birds while achieving timber management objectives and improving the ability of the forest to provide ecosystem services, such as improving water quality and reducing flooding.	<ul style="list-style-type: none"> • Identify regional conservation needs • Determine landscape condition for birds • Training and preparation a Forester's Guide as a resource for foresters and other land managers to integrate important habitat components into forest management planning. 	
	Habitat fragmentation drastically alter the nature of forest ecosystems	Promoting biodiversity in fragmented forests	Protect, recover and restore forest biodiversity	<ul style="list-style-type: none"> - Improve of forestry management practices to benefit biodiversity through trainings. - Increase of awareness of the environmental value of these ecosystems through social media campaign 	
C4	Lack of knowledge for SFM in important biodiversity areas: IBA, IPA and PBA	Capacity building of forest engineers for SFM in important biodiversity areas (IPA, IBA, PBA) in forest ecosystem	Protecting biodiversity in important KBA located in forest ecosystems	<ul style="list-style-type: none"> - Delineation of these areas in forest management plans - Training of engineers for appropriate practices in these areas - Preparation pilot forest management plans for units with these type of areas 	

GAP	Project	Aim	Objectives	Comment	
C5	Area of protective forests is low and there is not enough knowledge for FM in these forests	Appropriate forestry activities in protective forests	Improved knowledge of planners and engineers in practise about appropriate forestry activities in protective forests	<ul style="list-style-type: none"> - Training and preparation guidelines for: Delineation of protective forests (Japanese methodology supplemented with aspects from domestic legislation) - Sustainable forestry practices in various type of protective forests (for water quality and quantity, for soil protection, protection from mountain hazards..) 	There were some projects related to this but only for planners
C6	Lack of recreational facilities in the forests	Recreational aspects of the forests	Involving recreational aspects in SFM	<ul style="list-style-type: none"> - Analysis of possibilities for recreational areas - Preparation of plans for recreational areas - Construction of recreational facilities 	
C1- C6	Lack of knowledge of the concept of Closer to Nature Forestry (CNF)	Promotion of the concept of Closer to Nature Forestry (CNF)	Capacity building of engineer related to CNF	<ul style="list-style-type: none"> - Preparation guidance for CNF - Training of engineers 	
C1- C6	Concept of CNF is not implemented	Pilot Implementation of the concept of Closer to Nature Forestry (CNF)	Introduction of the concept in the forestry in North Macedonia	Analysis of appropriate forest management unit(s) for implementation	
C1- C6		Monitoring indicators for SFM	To monitor and evaluate implementation of SFM	<ul style="list-style-type: none"> - Improved quantitative indicators for SFM - Improved qualitative indicators for SFM 	
IV – Education and science					
	Lack of information about forestry activities in elementary and high school curricula	Lessons for forestry activities for children	Upgrade of curricula related to nature or geography with lessons related to forestry activities	<ul style="list-style-type: none"> - Preparation of lectures and materials for elementary school - Preparation of lectures and materials for high school 	
	Lack of organisation of forest engineers in any association	Establishment of Associations of forest engineers and another association of forest technicians	Organization of forester for empowering the sector	<ul style="list-style-type: none"> - Establishing Association of Forest engineers - Establishing Association of forest technicians 	
	Lack of continuous education of engineers in practice (except through international projects)	Establishing centres for professional training (for engineers and another for technicians) and enabling continuous funding for its existence	Improve of knowledge of engineers and technicians	<ul style="list-style-type: none"> - Improve knowledge of engineers - Improve knowledge of technicians 	

GAP	Project	Aim	Objectives	Comment
V - Financial instruments/economic policy				
	Replacement of the linear fossil economy into a circular bioeconomy			
Forest ecosystems services are not recognized	PES (Payment for ecosystem services)	Valorisation of the role of forests and their comprehensive multifunctional public role - payment for ecosystem services	<ul style="list-style-type: none"> - Valorisation of forest ecosystem services - Preparation of a model for PES - Involving PES in legislation 	
OR				
Finances for forestry are very low, almost neglected (program for extended reproduction)	Establishing a fund for SFM	<ul style="list-style-type: none"> • Compensation of forest management costs (afforestation, silviculture, and protection) for fulfilling the obligations undertaken by the various ratified conventions and other agreements (CO₂ credits, green tax - financial instruments). 		

Chapter XI. Conclusion

Forests cover circa 1 000 000 ha, which is 40% of the country. Various natural conditions enable richness in domestic dendroflora. Deciduous forests (mainly oak and beech) cover 92% of the area under forests, and conifers (mostly pine) about 8%. According to the area coverage, the most represented are pure and mixed oak stands (pubescent oak, Hungarian oak, Turkish oak, sessile oak, Macedonian oak etc.) with more than 50%, while according to the wood mass, the dominant species is beech (>50%). High forests cover 29% of all forest area, but 49% of the total growing stock, while coppices cover 61.6% of all forest area and 48% of the total growing stock. The rest of the areas (9.4%) are covered with ticket and bushes. The total forest growing stock is 75,939,573 m³, i.e. 91 m³/ha (European average is 163 m³/ha), and Albania, Spain, Portugal, Greece, Cyprus, and Malta have less than Macedonia. The total annual increment is 1,616,782 m³, that is, 1.93 m³/ha. It means that forests in RNM are not of good quality, mainly because of natural conditions. The allowable cut is generally 75% of the increment, but the realization is no more than 55% of the total increment. Aboveground biomass is 71.64 t/ha (total carbon 33.67 t/ha), and underground biomass is 19.32 t/ha (total carbon 9.08 t/ha). According to ownership, 89% are forests in state ownership, and 11% in private ownership

The basic legislation according to which forests and game are managed are: Law on Forests, Law on Hunting, Law on Forestry and Hunting Inspection and few rulebooks. In addition to the mentioned legislation, provisions from other laws related to the reproductive material, plant health, rural development, fire fighting, nature protection, environmental protection, water, protection and rescue, diseases management, are also eligible. The most important strategic document is the "Strategy for sustainable

development of forestry 2006-2026". Other most relevant national strategies and plans are those related to the following: sustainable development, nature protection, biodiversity, climate change, combating land degradation and desertification, spatial planning.

MAFWE is the main institution in charge, and in it there is a State Advisor for Forestry, a Forestry and Hunting Department, Forest Police Department and a State Forestry and Hunting Inspectorate. Beside those departments, there are several departments for agriculture forestry and water economy. The State Inspectorate of Forestry and Hunting, as a body within the MAFWE, controls and supervises the enforcement of the Law on Forests, the Law on Hunting and all other laws and legally binding acts in the field of forestry and hunting. The Forestry Police, as a sector within the MAFWE, protects the forests in accordance with the Law on Forests. Lack of human capacities is a problem

State-owned forests (89%) are managed by entities appointed by the Government of the Republic of North Macedonia, mostly by the public enterprise "National Forests". A smaller part of the state-owned forests are managed by Public Institutions for the Management of protected areas or local municipality administrations. Privately owned forests (11%) are managed by the owners, natural or legal persons, and some of them are organized in the National Association of Private Forest Owners (NAPFO). There are more than 200 forest management units and forest management plans are prepared every 10 years.

Education is realised through 2 forestry and landscape architecture classes in 2 secondary schools, while the only high education institution is the faculty in Skopje (HEF).

There have been several projects in the period for forest policy, ecosystem based and nature-based solution for disaster risk reduction, forest and water, sustainable land management in mountain landscapes, forest fires, environmental crime including illegal logging, but also in general for biodiversity and nature conservation.

Pan-European criteria for SFM are fulfilled to varying degrees: those related to the forest reserves and carbon cycles, vitality of forest ecosystems and the productive functions of forest have been fulfilled over 50%, while those related to the biodiversity, protective forests and socioeconomic issues are at a low level of implementation.

Various gaps are identified as follows: inappropriate or lack of by-laws, lack of new forest inventory, lack of cross-sectoral cooperation, especially within the nature conservation sector, bad image of forestry, low level of afforestation in the past period, lack of amelioration of degraded forests, lack of biodiversity related issues, non-wood forest products are almost neglected, socio-economic issues are neglected too, neglected issues related to protective forests, general lack of knowledge for new trends, concepts and approaches, no permanent continuous education through professional training, except via international projects, no existence of any association of foresters, finances for forest ecosystem services is very low and there is no fund for afforestation (SFM) like in the past, payment of forest ecosystem services doesn't exist.

Chapter XII. Recommendations

- Improve current legislation and develop new by-laws in order to fulfil national needs, but also international commitments,
- Implement forest inventory and forest information system,
- Improve cross-sectoral communication and prepare a communication plan,
- Improve image and raise awareness of importance of forestry,
- Improve forest management planning and engineering practices with integration of criteria and indicators for sustainable forest management, new concepts and trends, commitment from other national laws and plans and international commitments,
- Establish continuous education of forestry specialists,
- Establish associations of forest engineers and technicians,
- Increase of financing of forestry by the state budget,
- Establish payment for forest ecosystem services.

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- The 4th Fourth National Communication on Climate Change
- National action plan to combat desertification 2020-2026 plus Country LDN TSP (up to 2030)
- Spatial Plan of the RNM 2000-2020
- Projects websites

ANNEX



Vodno Mountain –

- in the past up to 1951 - huge bare land, high intensity of erosion, torrents permanently damaged center of the Skopje city
- nowadays - forest cover the area (toward the central part result of mass afforestation, on the western part self -restoration), reduced erosion, reduced torrent hazard, “lungs of Skopje”, the most popular recreative area in the Skopje vicinity

Picture 1 - From bare land to forests, result of afforestation and appropriate forest activities



Picture 2 Macedonian Pine (*Pinus Peuce*) in National Park “Pelister”

a) **Old forest**

b) **Macedonia pine occupy open places (moraine)**



Picture 3 Burned pine forest– Parkac – Maleshesevo, 7 years after the fire
a) *results of reforestation*

b) *results of self-restoration*



Picture 4 – Devastation

Picture 5 – Afforestation in arid areas



SUSTAINABLE FOREST MANAGEMENT IN MONTENEGRO

National Report

National Expert:

MSc. Darko Dubak

Chapter I. Abbreviations

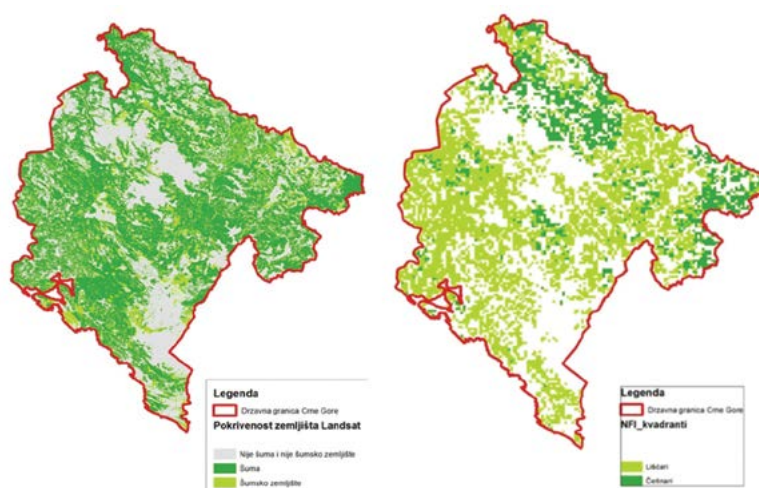
Chapter II. List of tables

Chapter III. List of figures

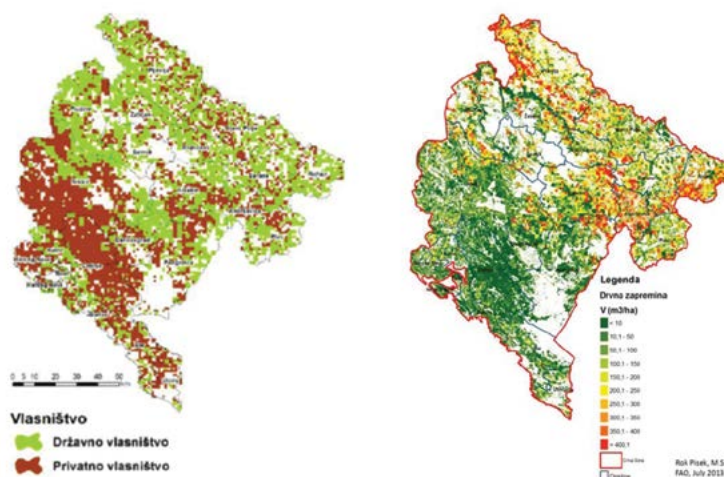
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Chapter V. Introduction

Forests in Montenegro represent a significant natural wealth. Taking into consideration the fact that the majority of economically used forests are located in the north of Montenegro, and that activities in forestry are complementary to agricultural activities and the survival of households and agricultural holdings in rural areas, thus forestry activities significantly influence the income generated by that population. While the condition of high economic forests substantially deteriorated in the 20th century in terms of standing volume, forests are now one of the most significant natural eco-systems, which create the basis for sustainable development of Montenegro. Forest biodiversity in Montenegro is highly preserved, which means that the natural composition of forests has been maintained and due to that a very wide range of ecosystem services are still offered. Carbon sequestration is already at a level that indicates that the goal of the 2030 Agenda for Sustainable Development in that sense has been achieved.



Of the total area of forests and forest land, 52.3% are state-owned and 47.7% are privately owned. The share of high natural forests in the area of state-owned forests is 71%, while the share of high natural forests in the structure of private forests is only 17%.



Therefore, the condition of forests in Montenegro from the point of view of productivity, stability and resilience is not at an acceptable level, and this is especially true for privately owned forests. A total of 47% of the area under forests is covered with coppice forests which, due to their structure and large amounts of dry plant and wood biomass on the ground, are very vulnerable to forest fires. At the same time, these forests are also not very productive in terms of timber production, although they grow in productive habitats to a significant extent.

The area of natural forests covers 821500 ha and the area of planted forests covers 5500 ha. In recent years the area under forests has increased because of migration out of rural areas.

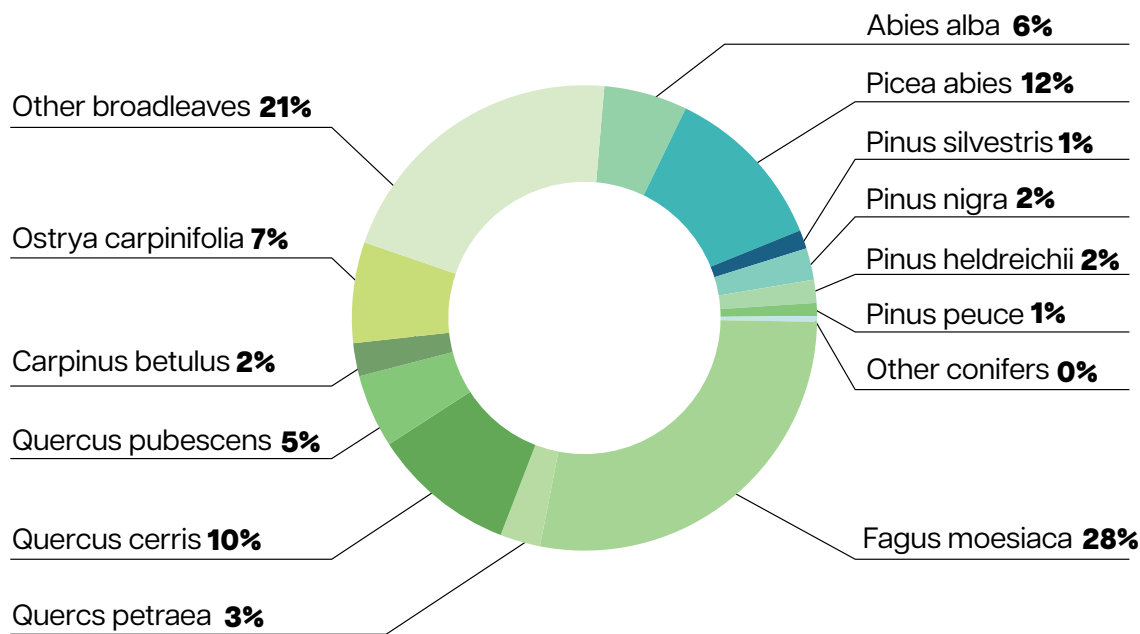
The forests are characterised by a dominance of broadleaved trees that cover 76.2% of the forest area, the broadleaved trees show a volume per ha of only 136.3 m³/ha, the conifers in contrast of 293.5 ha. The share of conifers of the volume is 40.2 %. The increment of conifers is with 8.1 m³ per ha on average higher as well compared to 2.9 m³/ ha of broadleaved trees and conifers contribute with 46.6 % to the entire increment.

Table. Growing stock by broad leaved/ deciduous trees, forest, Montenegro

coniferous or broadleaves	P forest	P %	P%*	N/ha	v 1000 m ³	v/ha	v %	Zv 1000 m ³	Zv/ha	Zv %	Zv/v	G/ha	Ds	hs	hs/Ds
Area not covered with trees beyond the minimum DBh	58316.9	8.0													
Coniferous trees	159307.4	21.9	23.8	550	46758.8	293.5	40.2	1295.9	8.1	46.6	2.8	25.5	29.9	18.3	0.6
Broadleaves trees	509500.8	70.1	76.2	989	69457.8	136.3	59.8	1484.1	2.9	53.4	2.1	16.1	22.9	14.3	0.6
Total	727125.0	100	100	814	116216.7	159.8	100	2780.0	3.8	100	2.4	16.9	25.2	15.6	0.6

DBh: Diameter at breast height.*: of area covered with trees beyond the minimum DBh

Dominating species are beech, oak, spruce, fir, and pine, and for conifers and broadleaved trees the share differs considerably with respect to area and wood volume (Figure); in total 12 conifer species and 59 broadleaf species have been assessed.



In total, the share of forestry and wood processing in the national income is together below 1%, which is insufficient, and its significant increase will be one of the biggest challenges of the relevant state forestry institutions. When we have a situation where forest owners are mostly people who do not have funds for forest restoration and the state budget is limited, it is especially important to define measures that will stimulate forest owners to use available EU funds for rural development through the IPARD support instrument, in order to regenerate and restore their forests.

Chapter VI. Strategic and legal framework in the Country

The regulation that is more closely related to the field of forestry consists of the following laws: Law on Forests ("Official Gazette of Montenegro", No. 74/2010, 40/11, 47/15);

- Law on reproductive material of forest trees ("Official Gazette of Montenegro" No. 37/07, 40/11, 47/15);
- Law on Nature Protection ("Official Gazette of Montenegro" No. 54/16);
- Law on National Parks ("Official Gazette of Montenegro" No. 28/14);
- Game and Hunting Act ("Official Gazette of Montenegro", no. 52/08 i, 40/11 48/15).

In 2008 the Forestry Department drafted a National Forest Policy of Montenegro through the FODE-MO project (Forestry Development Montenegro). The document with 32 proclamations was plagued to be crucial for forestry development, and in accordance with the Law of Forests, adopted in 2010, the following provision states that: "National Forest Policy shall define the course of development and sustainable forest management. The National Forest Policy shall be passed by the Parliament of Monte-

negro for the period of ten years". Formally the Forest Policy document has never been adopted by the Parliament of Montenegro, as it should be in accordance with the Law on Forests.

In March 2014, the Government of Montenegro reviewed and adopted a proposal of National Forest Development Strategy for 10 years (2014-2024). The strategy was accompanied by a five-year action plan that developed activities for achieving the objectives, indicators, relevant institutions, and sources of funding. Despite the fact that the strategy was i) developed with the involvement of international experts and included full involvement of relevant stakeholders, and ii) accompanied with a Strategic Environmental Assessment of the Strategy during the implementation of the strategy, it turned out that the strategic goals and the way of implementation were set too ambitious, and the forestry sector was not ready to implement the Action Plan.

The strategy was based on the concept of concession use of forests, which was then developed through long-term concession agreements.

The first report on the implementation of the Action Plan was prepared in 2018, for the previous period of implementation, and it showed a very small number of implemented activities, one part of partially implemented activities and the largest part of unrealized activities. At the same time, the forest concessions system was audited by the State Audit Institution, which showed a large number of weaknesses of that system and a low level of forest valorisation. In addition, although expected, significant development of the wood industry was not achieved.

In such a situation, the Government of Montenegro in 2018 decided to revise the existing Strategy. The MAFW defined new development goals that entailed forming a state-owned forest management company and a departure from forest concessions.

The revised Strategy for the Development of Forests and Forestry has two strategic goals:

- Equal and sustainable valorisation of existing forest resources while increasing the wood supply,
- Contribution to the growth of investments in forestry and wood processing, increasing competitiveness and employment, especially in the north of the country, with an increase in the use of production capacities.

The first strategic goal developed three operational goals, the first of which is the establishment of a new forestry organization in Montenegro. This essentially means a reform in the direction of the establishment of a state enterprise for forest management, which will, on a commercial basis, in the first phase take over the tasks of forest use from the Forestry Administration, while at the end it will manage the forests in Montenegro integrally on sustainable principles. Further goals in this direction are providing adequate financial resources for state forestry institutions and improving the motivation of personnel in forestry, creating an operational forestry information system, and developing a model of education in the forestry sector.

Another strategic goal was the development of the wood industry in Montenegro as a key component, while the accompanying operational goals were to strengthen the role of forestry in rural development, as well as the protection of biodiversity and other forest ecosystem services.

Given that the key goals of the Revised Strategy (reorganization of concessions, sale of wood assortments to the wood industry instead of the sale of wood on the stump) have not yet been realized, in the current Government Work Program for the period 2022-2025, for the current year, the development of a new strategy for the next five-year period is planned.

At the same time amendments to the Law on Forests are planned for 2023, which will create a legal basis for the establishment of a state enterprise for forest management.

Chapter VII. Institutional framework in the country

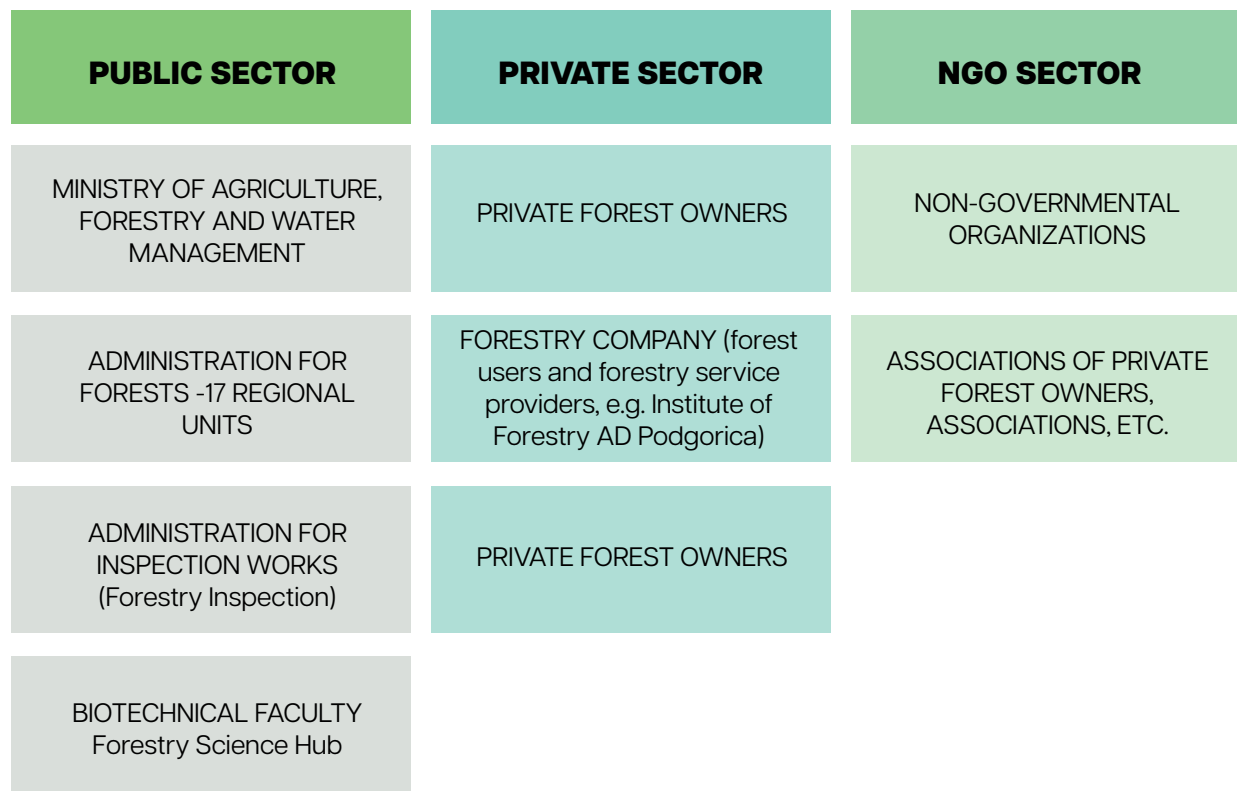
The last significant changes took place in 2000, with the adoption of the Law on Forests and the transformation that closed the Public Company “Crna Gora Šume”.

On that occasion, the Directorate for Forests of Montenegro (later the Directorate for Forests) and 14 forestry companies were formed as joint stock companies. After the forestry companies experienced initial business failures, the Rehabilitation and Revitalization Program of Forestry and the Wood Industry was carried out (2004).

On the basis of that Program, long-term contracts for the use of state-owned forests, based on concession contracts for a period of 15 years, were offered to the private sector (companies that bought former state-owned wood industry enterprises). The basis for these contracts was the Law on the Participation of the Private Sector in Performing Activities of Public Interest (precursor to the Law on Concessions, which was adopted in 2009).

With the adoption of the new Law on Forests in 2010, the concession system was formalized in the sector and is still in use today (5 concession contracts that expire at the end of 2022).

The current frame is shown in the following diagram:



PUBLIC SECTOR

The Ministry of Agriculture, Forestry and Water Management is an institution that hierarchically plays a leading role in forest resource management processes.

The Ministry proposes to the Government of Montenegro a development policy in the fields of forestry, wood industry and hunting. It deals with economic analyses in these activities, monitors trends in other sectoral policies, as well as EU development policies and takes care of harmonizing domestic legislation with EU regulations. Monitors the implementation of these policies. In terms of organization, the forestry sector in the ministry is divided into four directorates: Directorate for Forestry, Directorate for Wood Industry, Directorate for Hunting and Directorate for Monitoring in Forestry and Hunting.

The Forestry Administration is a state administration body responsible for forest management. Pursuant to the authorizations from the law, it manages state-owned forests and performs professional tasks in the management of privately owned forests (planning, remittances, protection, etc.). In terms of organization, it is divided into 17 organizational (regional) units and a central administration with headquarters in Pljevlja.

The Biotechnical Faculty has in its organizational structure a Forestry Hub, as a scientific research organizational unit.

PRIVATE SECTOR

Private forest owners are holders of the right to dispose of privately owned forests. Forests are managed in accordance with the Law on Forests. There are several associations of private forest owners, one operating at the national level while the others are locally oriented. We cannot speak of a significant influence of these associations on the management of forests in private ownership.

Concessionaires are companies created originally by the vertical integration of forestry companies and former state-owned companies in the wood industry, in accordance with the Program of Forestry and Wood Industry rehabilitation and revitalization (Government of Montenegro, 2004). These companies, through concession contracts, committed themselves for a longer period to the execution of certain jobs in forest management. Also, concessionaires later became commercial companies that only dealt with wood processing, and when obtaining concessions, they also developed organizational units for the forests exploitation.

Forestry companies and service providers in forestry (for example, Institute for Forestry AD was transformed from state ownership into a joint-stock company at the end of the 90s of the last century and deals with planning and design in forestry) are companies that deal with the use of forests in state and private ownership, production of forest reproductive material, forest management and other professional work in forestry.

The civil sector consists of non-governmental organizations and associations. Of the non-governmental organizations, there are no typical forestry non-governmental organizations, they are mostly organizations that operate in the field of nature protection and the environment.

Chapter VIII. Description of projects related to Sustainable Forest Management (SFM) in the past 5 years (National and International)

In the last 8 years, not a single international development project in the field of forestry has been active in Montenegro. After the completion of the FODEMO project, the European Commission asked Montenegro to complete the part of the project related to the FIS (Forest Information System), so one part was financed from budget funds, while the overall completion of the FIS was applied for through the IPA III instrument. This project was supposed to start in 2019, however, due to the COVID-19 pandemic, the EC diverted financial resources to fight against the pandemic, so it was not realized. Currently, after the re-application and approval of the project, it should start its implementation in December 2022.

COVID-19 also delayed the start of the regional project “Fire Landscape Management”, in which Montenegro also participates, which was supposed to start implementation at the end of 2019. Finally, during 2022, the implementation began, by holding a kick-off meeting and starting the selection of local staff by participating countries who will work on the project. The main goal of the project is to strengthen the resistance to forest fires and agricultural land on which people depend for socioeconomic development in the Western Balkans, using an inclusive approach that includes the local population, promotes gender equality and strengthens public awareness of the importance of preserving natural resources. This goal is in line with the framework strategic components of the SDC: development of resilience to climate change and sustainable management of natural resources. The project should achieve the following results:

- Improved cooperation through a permanent regional network of cross-border cooperation and knowledge exchange related to the management of forest fires;
- Improved capacities in the area of a broader approach to forest fire management through a multi-level sectoral approach;
- Improved policies and strategies in the field of forest fire management that will support sustainable management of forests and agricultural land at local, national and regional levels, encourage intersectoral cooperation, work approach, participation of local community and key actors in the development process.

During 2022, JICA (Japanese International Development Agency) (also after the postponement of the start of the project that was supposed to start in 2020) activated with Montenegro the further implementation of the project “Capacity Building for Disaster Risk Reduction through a National Forest Fire Information System (NFFIS) and Eco-DRR”. The Government of Montenegro, through the Rescue and Protection Directorate of the Ministry of Interior and the Ministry of Agriculture, Forestry and Water Management have prepared a project application and requested support from the Japanese Government for the implementation.

The overall goal of this project is to strengthen the national Disaster Management System of Montenegro and to contribute to the development of the capacities of the governmental agencies for protection against forest fires and other natural disasters. The project has two main expected outputs, 1) Complete Development, testing and operationalization of NFFIS (National Forest Fire Information System), and 2) Demonstration of Eco-DRR solutions to prevent natural disasters.

When it comes to national projects, the Ministry of Agriculture, Forestry and Water Management has been working on the reorganization of the forestry sector in Montenegro for the last five years. The economic balance presented in the Reform of the organization and the concept of forest management study (Government of Montenegro, 2017) shows disproportion of generated incomes per wood mass in standing volume and realistically possible income (and far below the optimal), which consequently minimized biological and technical investments in the forests. Namely, in October 2017, the Government of Montenegro considered and adopted a proposal for the reorganization of the concept of concessional use of forests and instructed the Ministry of Agriculture and Rural Development to conduct pilot projects, analyses, to prepare the estimation of fiscal effects, and afterwards prepare a draft model of reorganization of the forest management system in Montenegro.

By reorganizing the sector of forest management, Ministry of Agriculture, Forestry and Water Management aims to improve the functioning of this system and consequently improve the efficiency, multifunctionality and sustainability of forest management, as well as further development of the wood industry, which is the general objective of those activities.

The created documents resulted in the Reorganization Program for concessional forest use, which was adopted by the Government of Montenegro in June 2020. The program envisaged the reorganization of the Forestry Administration into a state-owned company "Šume Crne Gore DOO" (abbreviated ŠCG DOO), which would perform public and commercial functions in the management of forests, in accordance with the principles of the functioning of commercial companies.

The functions of the state administration, including the regulation of the existing system of concessions, which cannot be transferred to a company, would remain under the competence of the Forestry Administration. It is planned that the company ŠCG DOO will make commercial use of state forests outside of concessions, including the obligation to provide technical and biological investments in state forests, as well as for seed and nursery production. The plan is to work in parallel on personnel development, training for working with new equipment and technology.

As part of its public function, the company would perform services for the management of all special purpose forests and hunting grounds (LPN). The given organizational model is a consequence of the assessment that the so-called divided model of organization - into public forest administration and a business company, which would deal only with the use of forests - which was processed and proposed as the most optimal in previous studies within the framework of the Forestry Sector Reform project in Montenegro (GISS/Ferlin, 9/2018, Ferlin, 12/2018 and GISS/Golob, 11/2018), is not easily implementable in the short term.

However, the Program was not implemented at that time, because the amendments to the Forestry Act, which were a prerequisite for the reform, were not made. The key reasons were the political changes in Montenegro in 2020, and later the assessment that no financial resources were provided for the adoption of the Program in the Budget for 2020, as well as for 2021.

As already assessed earlier in the text, the implementation of the mentioned projects, especially the reorganization of the forest use system in Montenegro, is a prerequisite for sustainable forest management. If the status quo were to remain, the trends of unsustainable forest use would continue without the implementation of adequate forest cultivation and protection measures, as well as the burdening of the wood industry sector, regardless of the great development potential of that sector.

Chapter IX. Implementation of SFM principles in the Country in the preceding period and possible challenges

Forest ecosystems in Montenegro show high environmental stability, according to reports on the monitoring of key components of forest ecosystems such as forest biodiversity, distribution and health status of forests.

In the reports on the state of biodiversity in Montenegro, there is no information on the threat of any population of forest trees, as well as plant vegetation whose habitat is forest or forest land. Almost all forests are natural structures and stand out for their wealth of biodiversity, characterized by 70 species of trees and shrubs, which ensures their multifunctionality and stability.

Forest inventories in Montenegro found diverse forest communities in a very small area from Primorje to Prokletije and Durmitor, from evergreen Mediterranean forms of maquis to high-mountain boreal vegetation. A large number of relict and endemic species are present in very small distances (forests of munika, molica, Mugo pine, mountain maple, yew, bear hazel etc. Data on forest biodiversity are an integral part of forest management plans (chapters entitled "Bioecological basis of forest management")

The forest footprint given in the Sustainable Development Strategy until 2030 shows the growth of that value in the period 2006-2015. years and it indicates the increased demand of society for the services of forest ecosystems in relation to the offer of such resources and services from natural ecosystems. In the aforementioned strategy, it is stated that 75% of the total biocapacity of Montenegro is the biocapacity of forests, which indicates the high value of the ecological, economic and social functions of forests, but also the high dependence of achieving the goals of sustainable development of Montenegro on forest ecosystems.

The state of health is monitored through the monitoring of forest protection services in the Forestry Administration, as well as the number of harmful forest insects by setting pheromone traps. According to these data, in some management units in Pljevlja, in the previous ten-year period, the drying of forests occurred on smaller areas. Drying is, according to expert services and forest protection specialists in Montenegro, the consequence of the non-implementation of sanitary measures in the forests, which caused the gradation of harmful insects and the appearance of hotspots in the forests. The reason for not implementing sanitary measures is related to the weaknesses of the concession system used in forestry in the previous period.

The key threat to forest resources in Montenegro are forest fires and excessive cutting of forests (mostly in private ownership). Korina's data and forest vegetation data show a significant transition from the broad-leaved forest and mixed forests to the transitional woodland-shrubs and sparsely vegetated areas categories, which corresponds to the state of forest areas after several consecutive forest fires or after high-intensity logging.

The area under forests according to the data of the first national forest inventory indicates a significant overgrowth of mountainous and rural areas, mainly as a result of population depopulation. According to Korina's data, which has been monitored since 2006, this process is intensive in forest pastures as well as in the surrounding areas of high mountain settlements.

The ecological sustainability of forests in Montenegro is not questioned even when it comes to the effects of climate change. However, very little research has been done so far in Montenegro on this topic, so more concrete indicators of influence cannot be presented. For now, forest management plans do not contain specific instructions that would be used as adaptive measures through the planning process and through the implementation of plans.

Economic viability

The general conclusion of all key actors in forestry in Montenegro is that the existing system of forest management is unsustainable. The key links of unsustainability are the low level of valorisation of forests and, accordingly, the low level of income, as well as the financing of the sector.

Abandoning the concession model of forest use, dominant in the previous twenty-year period, appears as an imperative. The application of the concession model of forest use has led to low state revenues in forestry and the enrichment of concessionaires. Low incomes have led to a lack of investment in the cultivation and protection of forests, construction and maintenance of forest roads. This means that it is practically impossible to implement forest management programs with the funds allocated to the Forestry Administration for the implementation of forest management measures.

Also, the concession model caused insufficient development of the wood industry. Paradoxically, instead of obtaining wood from state forests on favourable terms and investing in semi-final and final wood processing, the concessionaires engaged in trade and resale of wood, which caused the export of technical wood as raw material, a grey economy in the fields of forestry and wood industry.

When considered that the percentage of the concession fee from the use of forests that is allocated to local administrations is 70%, the revenues that remained in the budget based on the use of forests amounted to a maximum of 3.26 million euros, that is, on average, almost twice less than the funds that were allocated from the budget for forestry (budget of the Forestry Administration). According to expert estimates from 2018, for sustainable forest management in Montenegro, a minimum of 8.5 million euros is needed by the Forestry Administration for the implementation of planning documents in forestry (not counting activities for arranging private forests, as well as for the national inventory of forest).

The key consequences of the problem are the poor state of forests and unsustainable forest management. Unsustainable forest management is expressed through the lack of funds for investment in forests, weak implementation of forest management plans and inadequate forest protection system, especially against forest fires. In the economic sense, the unsustainability is reflected in the disorganized wood market and unjustifiably low prices for wood from state-owned forests that concessionaires received.

Social sustainability

The social functions of forests in Montenegro, although one cannot speak of their developed use, have great importance for Montenegrin society.

Sustainability in this regard is mostly observed culturally through the development of a network of protected forest areas and the management of forests in protected areas. Also, the influence of the social functions of forests is very important for rural development.

In the last decade, the area of protected areas has increased. Two nature parks were established and an initiative to establish another park was launched. The largest part of these parks consists of forests and forest lands. If the areas of national parks and nature parks are added up, then it can be concluded that the percentage of protected areas in Montenegro of about 15% is considered a great contribution to the preservation and protection of natural ecosystems.

The survival of the population in areas rich in forests and employment in the activities of tourism, forestry and wood processing, as well as agriculture are indicators of the sustainability of forest management in rural areas. Historically, in the past, the largest part of the population of Montenegro lived in areas rich in forests, while at the present time, the trend is towards population migration to cities. In this sense, improvements in the use of social functions of forests in Montenegro cannot be stated, however, it also cannot be stated that the development potential that can be based on the use of social functions of forests, primarily tourism and recreation, is threatened.

Chapter X. Areas of possible further development of SFM in the Country

The previous chapter shows the main gap in the sustainability of forest management. This is the economic sustainability of forestry. It can be seen in brief through the following items:

Significantly reduced production function of forests

Although it is a fact that there is a constant demand for wood as a raw material, the amount of wood that the Forestry Administration makes available for use in state forests in recent years averages around 300,000 m³. If one takes into account the last section of the staff from the valid forest management programs for economic units, it is twice less than the projected possible staff. This is the first indicator of economic unsustainability. The reasons for this differ and require a special analysis. If we add to that fact the fact that the 300,000 m³ that are cut are made up of the highest quality wood assortments, this adds much more importance to the above indicator in the function of use and for a long number of years (no remittance was made, contractor projects, etc.). Ultimately, this means that commercial remittances of trees for felling are carried out instead of cultivation and sanitary remittances, which aim at optimal values of elements of forest stands (distribution of trees per area, volume, increase) for existing habitat qualities.

On the other hand, we have situations where wood processors lack the raw materials necessary for their work and therefore have reduced production, there is an energy crisis in the region, and sanitary wood and wood of poor quality are rotting in the forests of Montenegro.

Achieved production of wood assortments by forest users and concessionaires

Production reports made by the Forestry Administration only show the true picture of the situation. In recent years, production amounted to 60% of the contracted bdm (concession contracts and contracts for the sale of wood mass on the stump through one-year contracts). It can also be seen as a percentage of the possible felling area: about 25% (source: Forestry Administration - logging records)! This is a typical reflection of the inefficiency of the forest management system in Montenegro.

All this results with an increase in forests of a much smaller scale than the optimal increase for habitat conditions. All this also weakens the vitality and health of forests, reduces the absorption capacity for CO₂ storage, reduces resistance to climate change, etc.

A key option for the future is the establishment of a state-owned limited liability company which, in the first phase, will perform forest use (cutting, production of wood assortments and their transport) and commercial activities in forestry (sale of wood products), while the Forestry Administration will retain its organizational form and engage in forest management planning, monitoring the sustainability of forest management, and perform state administration tasks in privately owned forest management. The Ministry of Agriculture, Forestry and Water Management has initiated sectoral reform, all necessary

analyses have been carried out, after which the amendments to the Forestry Act will provide a legal basis for the establishment of a limited liability company for production and commercial activities in forestry. This leaves the concession model of forest use. This enables the realization of the Government's program goals related to improved management of forest resources and better valorisation of wood, growth of the wood industry and new employment in the economic sector, especially in the north of Montenegro, and the creation of a favourable business environment for investments in forestry and wood processing.

The key challenges relate to the transitional institutional arrangements and the provision of financial resources for the operations of the state enterprise for commercial use of forests. In order for a state-owned enterprise to start operations, it is necessary to provide financial resources in the amount of at least 13 million euros (according to the analyses and estimates of the fiscal impact). All of the above means that the project is very demanding and complex, that it requires significant logistics in both the professional and the financial part. It also requires international support, in order to exchange experiences and apply the best practices of forest management. This project is at the top of priorities for Montenegrin forestry. The success of the reform depends on a well-executed reorganization and provision of conditions for the execution of forest management tasks of public interest and optimization of the financial framework that will accompany the execution of these tasks.

The second segment that requires significant interventions in order to achieve the sustainability of forest management is the regulation of private forests and the creation of conditions for inclusion in IPARD rural development measures, in order to improve the condition of these forests.

Namely, private forests in Montenegro are not organized in the records of the Forestry Administration by cadastral parcels and forest owners. This means that their basic structural elements, such as volume, growth, as well as the existing infrastructure for managing these forests, are not known.

It is necessary to pass a process of consultation with private forest owners to create an overview of the willingness of private forest owners to improve the condition of their forests. Furthermore, it is necessary to develop a measure at the strategic level that will ultimately produce operational plans for private forest management, which are a precondition for the implementation of silviculture and protection measures in private forests. Finally, based on the previously mentioned assumptions, it is necessary to define support measures that will be in line with the EU Forestry Development Strategy and at the same time acceptable for as many users in Montenegro as possible. This is best done in the process of formulating a new strategy for forestry development, especially because the methodological development of the strategy implies public consultations.

The impression is that these two interventions are mutually related and dependent, due to the fact that the Forest Administration currently does not have the personnel capacity or the necessary finances to respond to the challenge of improving the condition of privately owned forests, and the commercialization of forest use by establishing a state enterprise for forest management has relieved the Administration for forests that could become a real service for private forest owners on both an administrative and professional level.

Chapter XI. Conclusion

When considering all of the above, it can be concluded that the forestry sector in Montenegro is currently going through very challenging times. The necessity of reforms is obvious and indisputable, but the complexity of the measures that need to be implemented is also clear.

Namely, trends that are currently ongoing in the EU (protecting, restoring and enlarging EU's forests to combat climate change, reverse biodiversity loss and ensuring resilient and multifunctional forest ecosystems; supporting the socio-economic functions of forests for thriving rural areas and boosting forest-based bio-economy within sustainability boundaries) are difficult to achieve for forestry in Montenegro, especially if you take into account the fact that Montenegro is the only country in Europe where wood from state-owned forests is sold predominantly in the cut state.

Also, it cannot be claimed that at least the general development measures defined by the Forestry Development Strategy (2014-2024) and the revised strategy (2018-2024) are not well defined. The 2014 version of the strategy was developed with the participation of a large number of international and domestic experts, through public consultations and with indicators set in the action plan for the first four-year implementation period. In fact, looking at it from the current point of view, it is difficult to imagine that the implementation of these measures is possible in a situation where the framework for financing the forestry sector is set so that 70% of the income from the use of forests belongs to local administrations, which on the other hand do not have any obligation according to the provisions of the Law on financing of local administrations and the Law on Forests to invest in the sustainability of forest management. Simply, the Government of Montenegro, primarily the Ministry of Finance, did not recognize the need to allocate much more financial resources for the forestry sector than the budget revenues from the use of forests, which is not even realistic after all.

Due to the chronic lack of financial resources, we have all the weaknesses of the current forest management system described above. These weaknesses put Montenegro in a position where it cannot obtain certificates for sustainable management for its state-owned forests, which further complicates access to the EU wood markets, limits serious investments in development projects in forestry and the wood industry, etc.

The conclusion is that international projects and cooperation are lacking for sustainable forest management. This especially applies to the fields of science and research, where all countries are looking for an integral approach and answers on a broader plan in relation to the impact of climate change on forests, the fight against forest fires, prevention of forest drying and monitoring the health status of forests.

This also applies to operational forestry, because Montenegrin forestry needs support in many fields: creation of a forestry information system; establishment of an adequate regulatory and planning framework for the use of forest ecosystem services, inclusion in IPARD measures of rural development, etc.

Furthermore, the conclusion is that the decision-makers in Montenegro did not adequately understand the current solutions to the problems in the forestry sector, and that the prevailing belief among the public is that the existing institutions do not perform tasks within their competence in an appropriate manner rather than that the existing system is dysfunctional, which makes them inert in acting in the direction of implementing reforms.

In the end, the general conclusion from interactions with interested parties and when informing the public is that the forestry sector (both public and private) has a matured attitude that reforms are necessary and that they can only bring changes for the better, given the current situation. This means that there is a consensus in this direction, which is very important for the success of the policy.

Chapter XII. Recommendations

Recommendation 1: Creating a Communication Strategy for the Forestry Sector

The described condition indicates that the forestry sector currently has no regulatory or management possibilities, that at this point and in this form, which would make it possible to create sustainable management of forests. Montenegrin society and decision makers see problems that occur in forests, but from their statements it is evident that they do not have a proven knowledge of key causes for this situation, or the opportunity to get acquainted with all the data, facts and expertise. This is important in order to form the attitude on the basis of comprehensive knowledge of the situation.

Through the communication strategy, all key actors would be introduced, especially the decision-makers and the public about what the solutions offered in the direction of sustainability of the sustaining of forests in Montenegro and which are possible benefits of Montenegrin society from forest wealth at the moment. The aim of the communication strategy would be for everyone to be motivated to act, as the status quo in this case produces new negative consequences for forest resources in Montenegro.

Recommendation 2: Creating a National Forestry Program (NFP)

The development of a national forestry program is a prerequisite for reform management. Precisely set goals, defined competences, financing sources, activities, as well as the indicators of success and results lead to the fact that the evaluation can be quite easily implemented and reacts in cases of delay in achieving goals, as well as the occurrence of the possibility of a problem to solve a problem in a better way than planned.

The National Forestry Program is the Policy Framework, which is the result of the Ministerial Conference on the Protection of Forests in Europe (MCPFE), which defines NFP AS A "... constitutes a participatory, holistic, inter-sectoral and iterative process of policy planning, implementation, monitoring and evaluation at the national and/or subnational level in order to proceed towards the further improvement of sustainable forest management and is widely applied in EU countries as an instrument for successful funeral of policies that lead to sustainable sustaining forests.

The main advantage of acting through the national forestry program is the possibilities for focusing on the SEA technical aspects of policy change, such as developing of cost-effective forest management, management of private forests, and so on.

The National Forestry Program is a policy tool for implementation of pan-European set of criteria and indicators of sustainable forests. Through reporting at the international level on the results of the National Forestry Program, international bodies that are important actors globally and in the EU are able to notice the gaps and debate interventions on panels, through projects or otherwise to provide logistics to overcome obstacles that occur during the course of reforms or to simply provide some countries with support of reforms on a bilateral level through their international programs.

Recommendation 3: Access to Regional Initiatives

Forest ecosystems distribution is unrelated to administrative borders of states, and in this regard, cross-border influences are a very important aspect that must be considered. Therefore, it is very important to develop regional cooperation and participate in regional initiatives that can primarily contribute to the conservation of forests or integral protection of forests of certain regions such as Dinaric Massive, etc. There are numerous examples where regional initiatives have been successful, for example, when fighting forest fires, in the countries of the Mediterranean, the preservation of genetic resources of endemic species of trees and the like. For Montenegro, this is especially important in the field of science and research, since it does not have its own in forestry, as well as in the field of wood traffic, since the Montenegrin market is small and very dependent on the opportunities in the markets of the region countries.



SUSTAINABLE FOREST MANAGEMENT IN SERBIA

National Report

National Expert:

Dr. Nenad Petrovic

Chapter I. Abbreviations

NFI	National Forest Inventory
PE	Public Enterprise
PFO	Private Forest Owners
FDS	Forestry Development Strategy
MAFWM	Ministry of Agriculture, Forestry and Water Management
EU	European Union
IPA	Instrument of Pre-Accession
NATURA 2000	Network of protected areas of the European Union
FLR	Forest Landscape Restoration
LDN	Land Degradation Neutrality
FSC	Forest Stewardship Council
GVA	Gross Added Value
GDP	Gross Domestic Product
IUCN	International Union for Nature Conservation
EUTR	UR Timber regulation
PA	Protected area

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Chapter V. Introduction



Picture 1. The forest cover in the Republic of Serbia

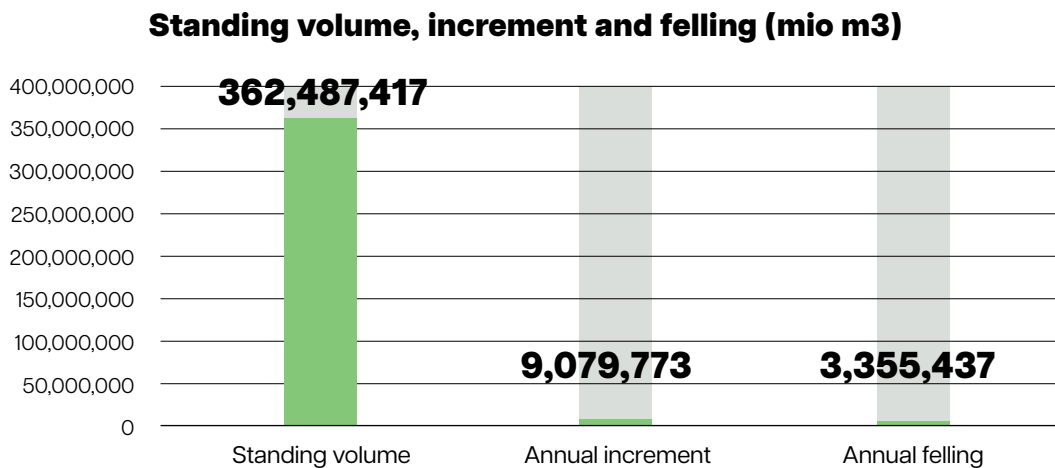
Source: NFI, 2009

The Republic of Serbia is considered a medium forested country, with 29.1% of its territory or 2.254.000 ha covered by forests. Forest cover occupies 7.1% of the autonomous province of Vojvodina (Northern part of the country) and 37.6% of Central Serbia. Compared to global levels, the forest cover percentage is close to the global percentage which accounts for 30%, but it is considerably lower than the European percentage, which is 46%.¹⁴

The ownership is divided into state and private ownership, and according to the data of the National forest inventory, state forests cover 1,194,000 ha or 53.0%, and private forests occupy 1,058,400 ha or 47.0% of the forest area.

Figure 1 shows the total standing volume of Serbian forests which amounts to 362,487,417 m³ and a volume increment of 9,079,773 m³. In addition, the figure shows annual felling volume from 2021, which amounts to 3,355,437 m³.

Figure 1. Standing volume, increment and felling



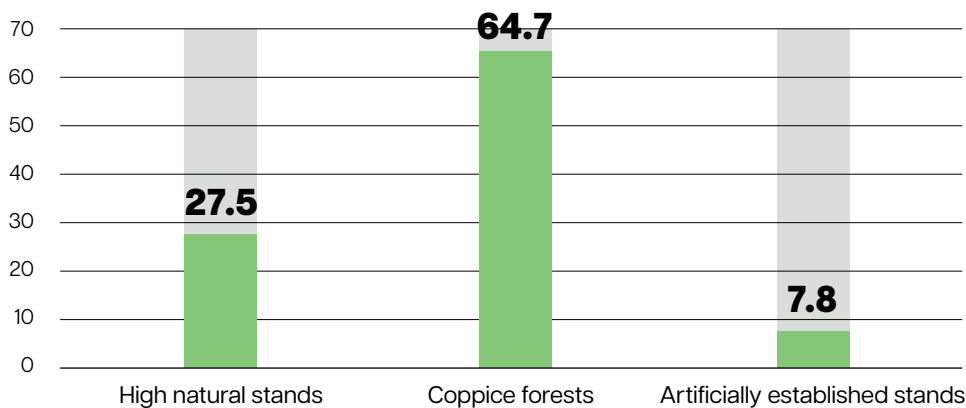
Source: NFI, 2009

All forests in Serbia are classified into five categories according to the mixture: pure broadleaf stands dominate with 59,0%, mixed broadleaf stands cover 29.3%, pure coniferous stands cover 8.7%, mixed broadleaf and coniferous stands cover 2.4% and mixed stands of conifers cover only 0.6% of the total forest area.

In Serbia, high stands occupy 27.5%, coppice regenerated stands 64.7%, artificially established stands 6.1% and plantations (poplar and willow clones) 1.7% of the total forest area (Figure 2). The above forest

categories differ significantly in their production effects. The value of average volume in high forests is 254 m³/ha, in coppice forests 124 m³/ha, in plantations of conifers and broadleaves 127 m³/ha and in poplar and willow clonal plantations 172 m³/ha. Current volume increment in naturally regenerated high stands is 5.5 m³/ha, in coppice forests 3.1 m³/ha, plantations 6.5 m³/ha, and in clonal plantations 9.0 m³/ha.

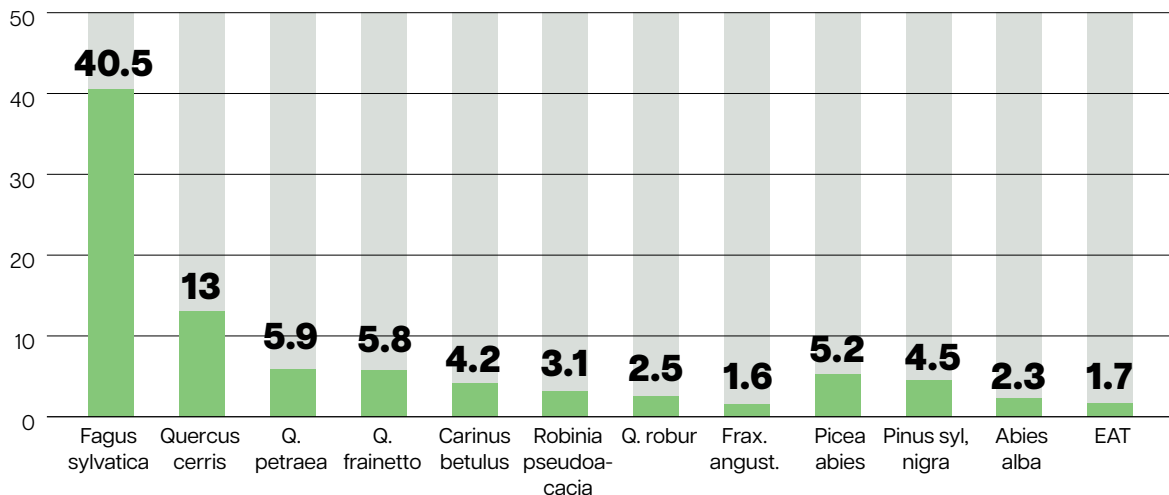
Figure 2. Forests by origin



Source: NFI, 2009

According to the National Forest Inventory, 49 tree species are identified in Serbia of which, broadleaf species include 40 species, while 9 species belong to coniferous species.

Figure 3. The shares of different tree species by volume



Source: NFI, 2009

The dominant species in Serbian forests in terms of volume (Figure 3) is beech, with a share of 40.5%. It is followed by Turkey oak which accounts for 13.0%, sessile oak with 5.9%, Hungarian oak - 5.8%, hornbeam with 4.2%, black locust - 3.1%, common oak - 2.5% and narrow-leaved ash - 1.6%. The most common coniferous species is spruce which accounts for 5.2% of the total volume, the Austrian pine and Scots pine with 4.5%, and fir with 2.3% of volume. The share of the clones of Euramerican poplar which is mainly present in Vojvodina and in the valleys of the Sava and Danube rivers, accounts for 1.7% of the volume, while the percentage of other tree species is 1% or less than 1%. The Second National

Forest Inventory is expected to be finished by the end of the year 2022, and there is an expectation that forest cover will increase due to natural processes.

According to the Statistical office of the Republic of Serbia, the annual felling is increasing each year (in 2020 it is lower due to the Covid 19 pandemic), and it can be noticed that firewood constitutes the biggest portion of production (more than 50%), while the portion of industrial and technical wood is around 40%, and the rest of the production is wood residue.

Table 1. Felled wood volume in the Republic of Serbia in the period 2016-2020

Group of assortments/ Year	Felled wood volume (m ³)				
	2016	2017	2018	2019	2020
Industrial and technical wood	1,233,246	1,250,795	1,275,900	1,368,649	1,258,553
Firewood	1,594,761	1,641,564	1,645,197	1,648,540	1,604,871
Wood residue	331,462	324,984	347,760	354,001	316,803
TOTAL	3,159,469	3,217,343	3,268,857	3,371,190	3,180,227

Source: Statistical office of the Republic of Serbia, 2020

The main activity of the state forestry sector is forest management, and thus tending of forests and production of wood assortments, as well as other forestry related activities. State forests in Serbia are managed by public enterprises (PE) established for forest management, namely PE "Srbijašume" and PE "Vojvodina šume", while management of state forests is also performed by five Public enterprises of National parks: PE "National Park Fruška Gora", PE "National Park Tara", PE "National Park Kopaonik", PE "National Park Djerdap" and PE "National Park Šar planina". In addition to this, smaller areas of state forests are managed by enterprises at the level of local governments, water management companies etc. On the other hand, private forests are managed by their owners, while professional and technical works in the forests of physical persons are performed by public enterprises. In addition to this, private forests of other categories of owners (i.e. private companies, Serbian orthodox church etc.) are managed by private companies.

The biggest owner of non-State forests in Serbia is Serbian Orthodox Church. According to the provisions of the Law on restitution of the properties to Churches and religious communities from 2006, until the end of 2016, the State returned 33.063 ha of forests and forest land to the Church. Forest management is performed by professional staff as part of the church company or they have a contract with private companies for forest management, that are now providing professional services to churches in the field of forestry. Except for the Church, there are no other big private forest owners. The local population and private forest owners could be part of one category to a certain extent, but they are split in two separate categories. A large number of local inhabitants are forest owners, but some of them do not have forests in their possession. According to the results of NFI, 47% of the forested area is privately owned. The size of almost 61% of properties is smaller than 3 ha, and there is a question of economically sustainable forest management, although the State has an intention to support the conversion of coppice forests into high forests. In the current situation, the coppice system of forest management regularly supplies private forest owners (PFOs) with firewood. The number of PFOs is still the subject of assessment, and it is estimated that there are between 500,000 and 800,000 PFOs in Serbia, who are not delineated in the cadastre, as well as a large number of parcels (estimated number of parcels is 3,900,000), and with such a large number of owners with small properties and small economic importance, the readiness to articulate a common interest at a really low level. Without a PFOs association, almost 50% of the forest area is left without a contact point for forest policy development and implementation.

Forestry plays an important role in the protection of soil from erosion and water sources, while preserving biodiversity, but it is also the main source of raw materials for the export-oriented wood industry, which together with forestry employs about 53,000 people, with exports of over 1.2 billion euros and a tendency of further increase.

The main products of forestry industry can be divided into those from the state sector, and those from the private sector. The activities of the state sector can be divided into products from forest management, nursery production, management of hunting grounds, management of fishing areas, and management of protected areas. In addition to this, the main products of the private sector are products from forest management, nursery production and hunting grounds management.

Chapter VI. Strategic and legal framework in the Country

Serbian forestry is based on the principles of sustainability, multi-functionality and close-to-nature forest management. Serbia's current forestry development strategy defines that forests are sustainably managed and used in such a way and to such an extent to maintain their biodiversity, improve productivity, regenerative capacity, vitality and their potential to meet the present and future demands of their environmental, economic and social functions. The Forestry Development Strategy is directly related to the Sustainable Development Strategy of Serbia as an umbrella document that defines the basic principles of sustainable development of the state and society as a whole in all areas of life of a nation and thus contributes to the overall sustainable development at the national and global level. The Law on Forests provides conditions for sustainable forest management through clearly defined goals related to sustainable maintenance and improvement of forests, especially their productive capacity, biological diversity, regenerative capacity, vitality, and improvement of their climate change mitigation potential, as well as their economic, ecological and social function, without harming the surrounding ecosystems. The Law on Forests treats all forest functions (production, ecological and social) in the same way and gives them the same importance and significance.

Forestry development strategy of Serbia

The main strategic document in Serbian forestry, the "Forestry Development Strategy of Serbia" (FDS) that was adopted by the Government of the Republic of Serbia in 2006 points out "conservation and improvement of the state of forests and the development of forestry as an economic branch" as its main objective. One of the guiding principles of the Strategy is forest multifunctionality, under which is defined the irreplaceable role of forests in the mitigation of climate change, and in this sense the enhancement of forest capacities for that purpose.

The Strategy points to an increase in the area under forest cover, which is necessary for increasing the contribution of the forest sector to the State economy. For this purpose, the State committed itself to provide financial and legal assistance for the afforestation of the land on which it is economically and ecologically rational to have forests. Beside afforestation, the improvement of forest resources by converting coppice forests to high productive forests is the second important measure in the Strategy. For this measure, the State defined commitment for support of its implementation in the legal and financial forest policy instruments. Sustainable management of forests and securing their vitality, health and protection regarding abiotic and biotic factors that have negative impact on forests was clearly defined. In comparison to previous forest related policy documents, FDS doesn't explicitly define nu-

merical targets in afforestation and conversion of coppice into high productive forests. The total area envisaged for afforestation and conversion of coppice forests into high forests for a period of 10 years is given in the FDP with the action plan (a document prepared but not adopted to date).

Research, international cooperation, knowledge transfers and support to private forest owners in sustainable forest management and establishing Private Forest Owners Associations (PFOA) are clear objectives of the Strategy.

Law on forests

The Law on Forests (2010) regulates the preservation, protection, planning, cultivation and use of forests, the disposal of forests and forest land, supervision over the implementation of this law, as well as other issues important for forests and forest land. Art. 3 states that this law provides for the conditions for sustainable forest management and forest land as a general interest good, in the manner and to the extent that it permanently maintains and improves their production capacity, biodiversity, renewability and vitality, and improves their potential to mitigate climate change, as well as their economic, ecological and social function, without causing damage to the surrounding ecosystems. The protection, preservation and improvement of forests is defined in art. 4 as an activity of general interest, which shall, among other things lead to 1) the prohibition of permanent reduction of areas under forests; 2) increase of the total growing stock, as well as the share of state ownership in the forests in the Republic of Serbia, and especially in special-purpose forests; 3) establishing, maintaining and using the national information system in forestry; 4) providing material, expert and advisory support to forest owners; 5) prohibition of alienation of state-owned forests, except in the cases provided for by this Law; and 6) conservation and protection of forests as environmental factors. Art. 6 on the economic functions of forests notably recognizes that forests mitigate the harmful effects of greenhouse gases emissions by carbon sequestration, oxygen and biomass production, water purification, supply and protection of underground streams and sources of drinking water, as well as the protection of land, settlements and infrastructure from erosion and landslides.

Article 9 prohibits forest devastation and clearing, as well as clear-cutting which is not authorized as the regular form of forest regeneration. In addition, articles 11 and 12 define that compensation shall be paid for changes in land-use form of forests and forestlands. The compensation for this purpose is paid in amount of the tenfold value of the forest subject to land-use change, or in the amount of the fivefold value of the forest subject to land-use change, if the new land is to be used by small scale renewable energy projects.

In 2012, after abolishing Article 86 of the Law on forests which prescribed payment for ecosystem services where each legal entity in Serbia should pay the amount of 0.025% of revenues to the fund for the improvement of forests, the main financial mechanism for the implementation of the strategic goals of the FDS and FDP disappeared. The main financial mechanism of support to the implementation of the strategic objectives has become BFF, now named as Fund for forestry development. The main source of income for BFF is compensation for the utilization of forests and forest lands, which for state forest companies and private owners, rates 3% of the market value of wood products produced at the forest road. The second source of funds for forestry development, as prescribed by the Law on Forests, is compensation for land-use change from forest to other land use categories in the amount of the tenfold value of the forest which is subject to land-use change, or in the amount of the fivefold value of the forest subject to land-use change, if the new land is to be used by small scale renewable energy projects.

Despite abolishing the fee for ecosystem services, the Law on Forests clearly supports the achievement of FDS objectives. In the main aspects related to climate change mitigation and land degradation, it contributes positively to reducing negative impacts through the prohibition of reducing the area under forests, support to the afforestation through the fund, conversion of coppice forests into high forests,

and providing help to prevent forest fires which can be the main danger for the negative impacts on forest ecosystems.

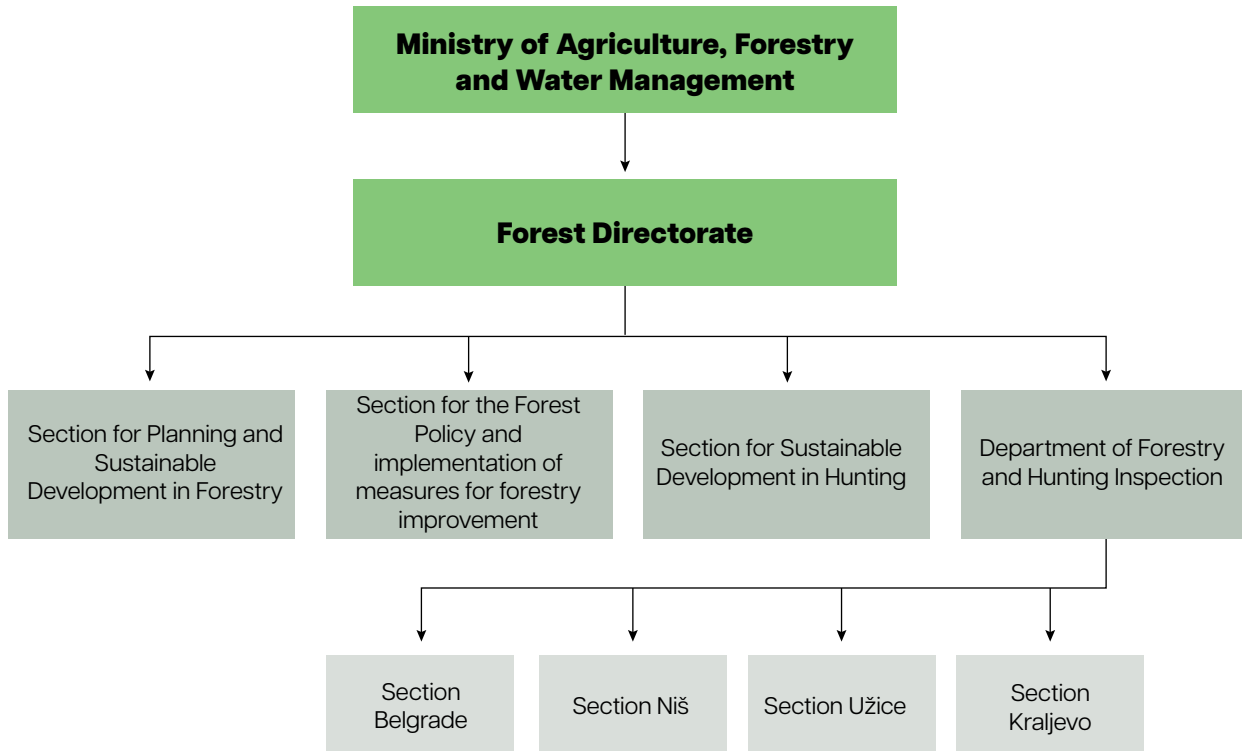
Chapter VII. Institutional framework in the country

In addition to the Law on Forests the legal framework from the sectors of economy, finance, and labour regulates the forest-based industry. The main institutions that regulate the forest-based industry sector are the Ministry of Agriculture, Forestry and Water Management (MAFWM), and the Ministry of Economy (ME). MAFWM through the Forest Directorate has the responsibilities for the approval of Forest management plans and control of the implementation of works on forest management, as well as of the control of trade in wood assortments. ME regulates activities related to wood processing, as well as involving economic development, and control of enterprises of the Forest based industry sector. The organizational structure of MAFWM is shown in picture 2.

The Ministry of Agriculture, Forestry and Water Management was established in 2017 when, in accordance with the Law on Ministries of 29 June 2017, it succeeded the former Ministry of Agriculture and Environmental Protection, and it was re-established in 2020, by the amendments of the Law on Ministries. The Ministry performs state administration tasks related to: agriculture and food industry strategy and development policy; analysis of production and agricultural product markets; balances for agri-food products and commodity reserve system of basic agri-food products; measures of market and price policies, structural policy and land policy in agriculture; investment measures for improving agricultural production; proposal of systemic solutions and protective measures in respect of imports of agricultural products and foodstuffs; the protection and use of agricultural land; the production of agricultural inputs for agriculture and food industry, the production and trade in alcoholic and non-alcoholic beverages, ethanol, tobacco and tobacco products as well as foodstuffs; the quality control of agricultural products and foodstuffs, wine, alcoholic and non-alcoholic beverages, fruit juices and concentrated fruit juices, mineral water, ethanol, tobacco and tobacco products in domestic and international trade; rural development; agricultural cooperatives; extension services; market information system in agriculture; production, certification and quality and transport control of seed and planting material; acceptance and protection of plant varieties and domestic animal breeds; determination of eligibility, risk assessment and implementation of control measures related to biosafety in respect of limited use; introduction into production, marketing and import of genetically modified organisms; conservation and sustainable use of plant and animal genetic resources for food and agriculture; creating conditions for access and implementation of projects within the competence of the Ministry funded by the EU IPA funds, donations and other forms of development assistance; inspection in the field of agriculture, as well as other tasks prescribed by law.

The Forest Directorate is an administrative body within the Ministry of Agriculture, Forestry and Water Management that performs state administration and professional tasks related to: forestry policy, forest conservation, promotion and use of forests and wildlife, implementation of measures for the protection of forests and wildlife, control of seeds and planting material in forestry, inspections in the field of forestry and hunting, as well as other tasks determined by Law.

Picture 2. The organizational structure of the Serbian forestry sector



The Section for the Forest Policy and implementation of measures for forestry improvement

within the Forest Directorate performs tasks related to: the preparation of expert bases for determining and implementing the policy in the field of forestry; preparation of expert bases for drafting laws and by-laws in the field of forestry; development of the Forest Development Program of the Republic of Serbia; preparation of analyses, reports, information and other expert and analytical materials in the field of forestry; preparation of a financial plan in the part referring to expert advisory activities in the forests of owners - natural persons and incentive means for the improvement of forestry; preparation and implementation of public announcements - for the allocation of incentive funds for the budget for the improvement of forestry; monitoring the realization of contracted works from the budget funds for the improvement of forestry; defining the areas, the types and quantities of forest reproductive material for afforestation; monitoring the state of production of forest seed and planting material and preserving the genetic variability of forest species and proposing measures for the improvement of this activity; organizing professional seminars and advising from the scope of the Department, and other related tasks.

The Section for Planning and Sustainable Development in Forestry

performs activities related to: participation in the development of strategic and planning documents in forestry; monitoring, analysis and approval of forest management planning documents; providing expert opinion on amendments, drafts and proposals of laws, proposals of other regulations and general acts; preparation of contributions for relevant programming and strategic documents of importance for the fulfilment of obligations and achievement of goals and competencies of the Directorate in the field of international relations; assessment of expert findings related to the assessment of the value of forests and forest land for the purpose of land use change; preparation of opinions on regulations, planning and other acts in the field of environmental protection, spatial planning and other relevant sectors and their implementation in strategic and planning documents in forestry; maintaining a database on the forest fund

of the Republic of Serbia; records on basic statistical indicators of forestry of the Republic of Serbia; monitoring and analysis of data on the execution of annual forest management plans; monitoring the implementation of entrusted tasks in the forests of individual owners; protection of forests from plant diseases, pests and fires, as well as monitoring and proposing measures for their control; organization of professional seminars and conferences related to the development and implementation of planning documents in the field of forestry; as well as performing of other tasks in this area.

The Section for Planning and Sustainable Development in Hunting performs activities related to: proposing measures for the improvement of hunting; preparation of professional bases for drafting regulations in the field of hunting; approving management plans for hunting ground management and annual hunting ground management plans; monitoring the execution of planning documents for hunting ground management; preparation of a financial plan in the part related to funds for the development of game and hunting; defining measures and activities for the allocation of budget funds in the field of hunting; organizing professional seminars and conferences within the scope of the Section; other tasks in this area.

The Department of Forestry and Hunting Inspection within the Forest Directorate performs tasks related to: the supervision of the performance of entrusted tasks; supervision of the implementation and enforcement of laws and other regulations in the field of forestry, forest seed and planting material, forest protection and hunting; monitoring the implementation and enforcement of standards; overseeing the implementation of laws and other regulations and acts relating to forests included in national parks; supervision of the implementation of public authority tasks by enterprises and other organizations entrusted with the exercise of public authority; coordinating the inspectors work at field; participation in providing expert solutions in drafting regulations and other general acts within the scope of the Forest Directorate; participating in the preparation of reports, answering to parliamentary questions and petitions related to the scope of the Department; providing opinions, instructions and guidelines for the application of regulations; providing expert assistance to inspectors in the supervision and enforcement of forestry and hunting laws and regulations; drafting of requests for the initiation of criminal proceedings, appeals and appeals against decisions of judicial bodies issued upon submitted requests.

At the level of the **Autonomous province of Vojvodina** tasks for the implementation of administrative jobs in the forestry sector are delegated to the Provincial secretariat for agriculture, Water Management and Forestry. Inspection tasks are done through the Department of forestry-hunting inspection.

Chapter VIII. Description of projects related to Sustainable Forest Management (SFM) in the past 5 years

Finished international projects:

- 1. Innovative Forest Management Planning** – this project was implemented in order to reinforce and strengthen forest functions and services, because there was a need to develop and improve the planning and monitoring methodology for Serbia's forest management. This methodology focuses on close-to-nature forest management as the guiding principle. The leading institutions of this bilateral project are the German Federal Ministry of Food and Agriculture and the Serbian Ministry of Agriculture and Environmental Protection. The duration period was 2015-2017, and

the project was financed by Bundesministerium für Ernährung und Landwirtschaft (BMEL) of Germany. Nowadays, the improved methodology for forest management planning defined in the scope of this project is starting to be implemented in Serbia.

The institutions included in the project realization are

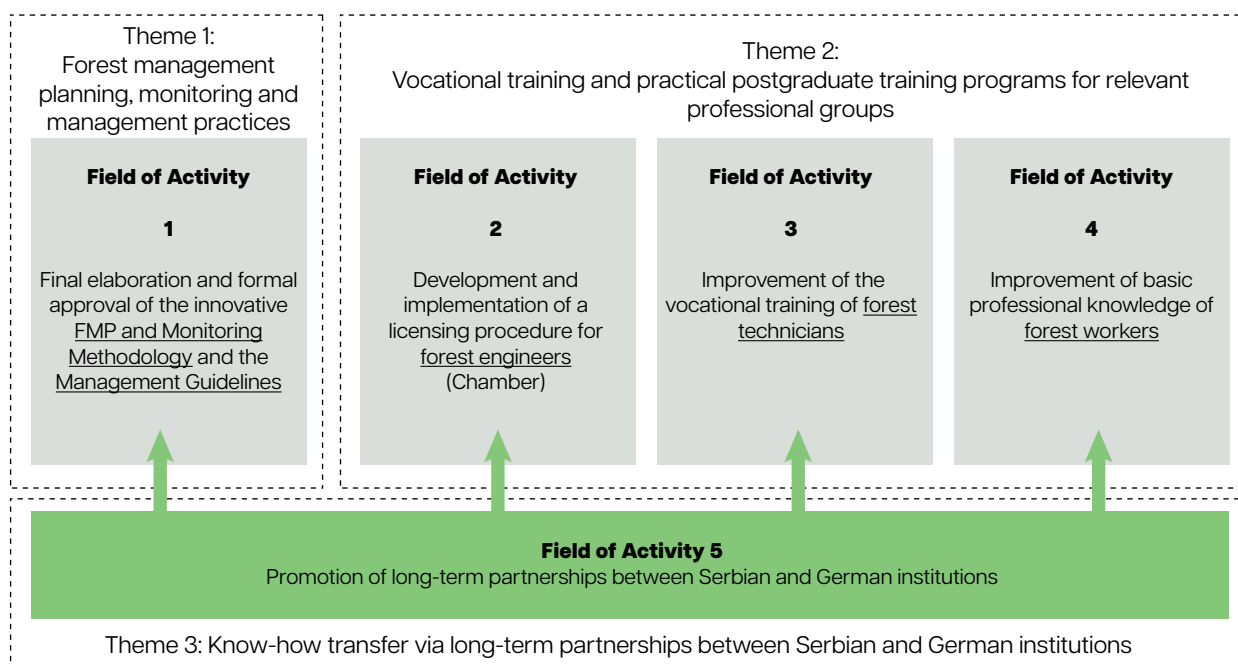
- Federal Ministry of Food and Agriculture of Germany (BMEL)
- Ministry of Agriculture and Environmental Protection
- Faculty of Forestry, Belgrade
- Institute of Forestry, Belgrade
- Institute of Lowland Forestry, Novi Sad
- PE "Srbijašume"
- PE "Vojvodinašume"
- Monastery forests of the Eparchy of Šabac

Contract implementation period: 2015-2017.

Contracted value: EUR 500,000

2. Vocational and Postgraduate Training in the Forestry Sector - In the first cooperation between the Serbian Ministry of Agriculture, Forestry and Water Management and BMEL in 2014, several challenges for the Serbian forestry sector were identified. Due to the political changes in the region, the Serbian forestry sector required updating to facilitate the implementation of modern forest management. This cooperation project addressed the lack of practical orientation in vocational training and the missing practical postgraduate training programs. The project duration was 2017-2019, and the project was financed by Bundesministerium für Ernährung und Landwirtschaft (BMEL) of Germany. The project had 3 main themes, with five fields of activity (Picture 3)

Picture 3. An overview of project activities -BMEL 2



Institutions which are included into the Project realization are:

- Federal Ministry of Food and Agriculture of Germany (BMEL)
- Ministry of Agriculture, Forestry and Water Management
- Chamber of Forestry Engineers of Serbia
- Faculty of Forestry, Belgrade
- Institute of Forestry, Belgrade
- Institute of Lowland Forestry, Novi Sad
- PE "Srbijašume"
- PE "Vojvodinašume"
- Monastery forests of the Eparchy of Šabac

Contract implementation period: 2017-2019.

Contracted value: EUR 500,000

Ongoing projects:

1. **Twinning project: Improvement of forest management in Serbia as a contribution to climate change adaptation and mitigation** – The overall aim of this project is to improve forest governance in Serbia in line with the EU standards and requirements and to introduce a comprehensive sector policy to ensure the reduction of illegal activities and resilience of forests to climate change. The specific objective is to strengthen the capacities of the forestry sector in Serbia to be able to implement the obligations stemming from EU standards and regulations in the field of forestry and forestry related fields, including timber market, the Forest Information System, subsidies, NATURA 2000 and bio economy.

Institutions which are included in the project realization are:

- Austrian-Slovak consortium: Republic of Austria: BFW; EAA; Federal Ministry of Agriculture, Regions and Tourism; Austrian Federal Forests;
- Republic of Slovakia: National Forest Center Zvolen, Ministry of Agriculture and Rural Developments Slovakia
- Republic of Serbia: Ministry of Agriculture, Forestry and Water Management - Directorate for Forests

Implementation period: 24 + 3 months, beginning on January 11, 2021

Project value: 1,000,000 EUR

The project is financed by the EU-IPA fund

2. **Enabling environment at policy, field and market levels for Forest Landscape Restoration (FLR) to achieve Land Degradation Neutrality (LDN) in Serbia** – The project objective is to promote FLR and LDN practices for the recovery and restoration of prioritized landscapes that sustain environmental services and food security and to establish support mechanisms for achieving and monitoring LDN at the national level. This project also prepares the ground for an envisaged GCF initiative that will upscale successful FLR practices and contribute to the government's UNCCD commitment to increase the forest cover to 41% of Serbia's national territory (LDN target) by 2050. There are three components of this project:

Component 1: Enabling environment for FLR in support of LDN

Component 2: Demonstrating LDN through testing of FLR approaches in pilot landscapes

Component 3: Knowledge management, monitoring and evaluation and public awareness raising

Basic data about the project:

- FAO Regions: Europe and Central Asia
- Location: Serbia
- GEF Period: GEF – 7
- Project Cycle Status: Operationally Active
- Project Type: Child project
- Funding source (Trust Fund): GEF Trust Fund
- GEF Grant amount: USD 746,121
- Co-financing amount: USD 3 183 000
- Period of implementation: 2021-2024.

3. Contribution of Sustainable Forest Management to a Low Emission and Resilient Development – The project objective is to contribute to the conservation of biodiversity and climate change mitigation through the promotion of multifunctional sustainable forest management in productive forest landscapes. Project is implemented through three components:

- Component 1: Enabling environment for multifunctional sustainable forest management
- Component 2: Multifunctional Forest management
- Component 3: Monitoring, evaluation and dissemination of lessons learned

Basic data about the project:

- Focal Area: Multi Focal Area
- FAO Regions: Europe and Central Asia
- Location: Serbia
- GEF Period: GEF – 6
- Project Cycle Status: Operationally Active
- Project Type: Full Size
- Funding source (Trust Fund): GEF Trust Fund
- GEF Grant amount: USD 3 274 658
- Co-financing amount: USD 26 180 141
- From: 19.02.2018 - 31.12.2021.

Ongoing regional projects

4. “Regional program for landscape fire management in the Western Balkans (2022-2026). Regional Project, in the inception phase with a duration of 4 years, financed by the Swiss Confederation. The overall goal of this LFMWB is to increase the resilience of Western Balkans forests and landscapes against fires and benefit the people who depend on these landscapes for their livelihoods and socioeconomic development. This goal is aligned with the SDC’s Framework strategic components: Climate-resilient development and Sustainable management of natural resources. The Programme outcomes (1) A lasting regional network is established and contributes to cross-boundary knowledge exchange and cooperation in landscape fire management (LFM); (2) Strengthened capacities on broader LFM approaches allow for an effective cross-sectoral collaboration at multiple levels; (3) Revised policies and strategies on LFM are in place to support sustainable landscape management at local, national and regional levels; initiate intersectoral collaboration, improved working approaches, involvement of the community and key stakeholders in the development processes. The project partners are supported in taking the driving seat to ensure the sustainability of the Programme interventions at the national, regional, and inter-

national levels. The LFMWB Programme is establishing strong and trustful national and regional networks for LFM. The objective of establishing the networks is to launch multi-stakeholder policy dialogues, foster better cooperation and strengthen the capacities in the WB region. Furthermore, the Programme contributes to encouraging the integration of LFM as an essential part of climate change adaptation and mitigation strategies.

Chapter IX. Implementation of the SFM principles in the country in the preceding period and possible challenges

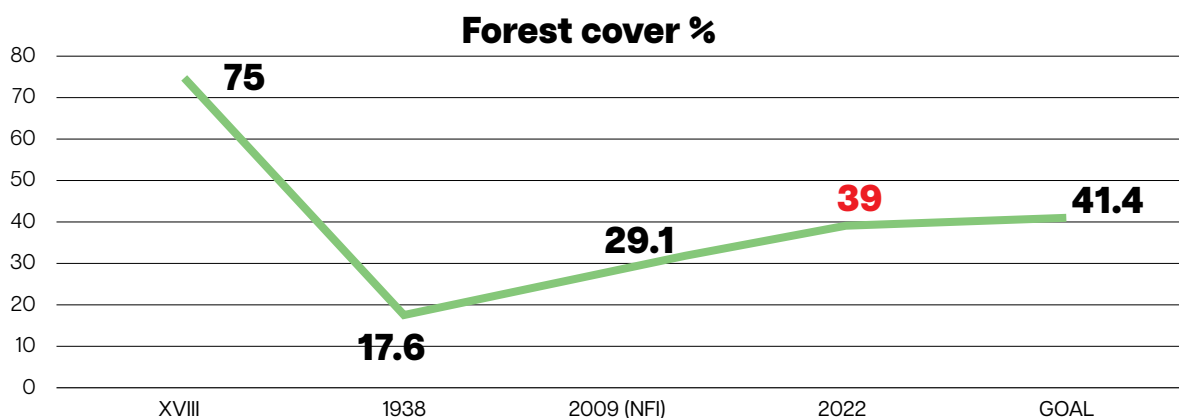
As a candidate for EU membership, Serbia supports all processes defined by EU and follows EU policy in all fields, as well as in the field of forestry. Important policy process defined for the Western Balkans as a part of the European Green Deal is the Green Agenda for Western Balkans, where Declaration on this process has been signed in November 2020, by the Western Balkan countries, including the Republic of Serbia. The Western Balkan countries pledged to implement measures in the areas of climate change and pollution prevention, energy development, circular economy, as well as biodiversity development, sustainable agriculture, etc.

The implementation of SFM in the Republic of Serbia will be shown through six Pan-European criteria for sustainable forest management.

Criterion 1: Maintenance and Appropriate Enhancement of Forest Resources and their contribution to the Global Carbon Cycles

Speaking about the forest cover in Serbia, it can be noticed in figure 4 that during the 18th century the forest cover was 75 % or higher, while in the period before World War II it was 17.6 %. This shows that forest cover decreased by almost 60% in the late 18th and 19th centuries, when forests were destroyed in order to create more arable land. In the period after the WWII, massive afforestation actions were initiated, and in 1980s the forest cover of Serbia was around 24 %.

Figure 4. The forest cover trend in Serbia



The first National Forest Inventory in the Republic of Serbia was implemented in the period 2005-2008, while its results were published in 2009, and these results show the forest cover rate of 29.1%. The Second National Forest Inventory is in progress and its preliminary results show that the forest cover will reach 39%. This is mainly due to the reason of the migration of rural inhabitants and abandonment of areas of extensive agricultural production.

In addition to the increase of the forest cover, forest management plans also increase the scope of works and the level of annual felling. In state-owned forests felling is implemented on a regular basis according to the Law, but there is still space for improvement since the provisions of Forest management plans are fulfilled to the scope of 83%. Also, the investments into the forestry sector are increased from 2015 onwards, and now the number of subsidies reaches 7.65 million Euros in 2022.

Criterion 2: Maintenance of Forest Ecosystem Health and Vitality

According to the Law on forests from 2010, forest monitoring is a system of constant monitoring and analysis of the overall state of forest ecosystems, especially their vitality, state of health and biological diversity for the purpose of undertaking preventive measures and their protection. The users and forest owners that manage forests in accordance with the Forest management plan, are obliged to monitor the impact of biotic and abiotic factors on the health of the forest and take timely measures to protect forests and forest land. In addition to this, "Reporting-diagnostic forecasting work in forest protection" is delegated to the Institute of Forestry from Belgrade, while Serbia is also a part of ICP Forests¹⁵ and regularly collects information on the condition of forests in Serbia and shares it within this process.

The big floods occurred in Serbia in 2014, and in these severe floods and landslides as a consequence of erosion, a big amount of timber volume was damaged and habitat lost. In addition to this, during the winter 2014/2015 a large area was struck by ice-break in Eastern Serbia, and also a big amount of wood volume was damaged. These unforeseen circumstances put great pressure on the forestry sector, and some of these disturbances were sanitized, while the consequences of ice-breaks are still in the process of sanitation.

Big droughts occurred in 2012 and 2022. In 2012, conifers (spruce) in the Kopaonik National Park were particularly affected, while spruce and fir were affected in the Tara National Park. In addition to this, forest fires, as a consequence of droughts are increasing the number of burned areas. In the period 2012-2021 in the state-owned forests managed by PE "Srbijašume", the total number of forest fires was 671, while burned areas covered 16.916,29 ha. Sanitation plans that include measures for the restoration of these areas are prepared for all these forest fires and affected areas.

Criterion 3: Maintenance and Encouragement of Productive Forest Functions (wood and non-wood)

The construction and maintenance of forest infrastructure, especially forest roads are important aspects of SFM in Serbia. Forest roads are a precondition for a rational, economical, and integral management of forest and hunting resources. The importance of forest roads for forest management, and especially for the use of forests is high. By opening forests, conditions are created for greater use of mechanized equipment for felling and production of wood assortments, as well as the transport of these assortments, tending of forests, protection against pests and diseases, as well as for protection against forest fires.

The density of the network of forest roads in the area of PE "Srbijašume" is about 12 m/ha, while in PE "Vojvodinašume" is about 5 m/ha. Due to the poor openness of one part of forests, felling is not carried out on the entire surface, but only in forests from which it is possible to use wood assortments. Felling is also carried out in hard-to-reach forests, which significantly increases costs and compromises the issue

of forest use profitability. Such unfavorable conditions for the realization of annual felling lead to the problem that part of the wood volume is not used. It decays, and forestry, wood industry and the state as a whole suffer reduced revenues.

New technologies for forest utilization are implemented, especially in the forest areas managed by PE "Vojvodinašume", where felling in poplar plantations is done by harvesters, which are also used in PE "Srbijašume" for the same purpose. In addition, new techniques of felling and processing of wood assortments are presented to forestry workers, who are trained by the Chamber of forestry engineers of Serbia, for safe work in forestry, as well as for the optimal use of forest resources.

On the other hand, non-wood forest products are not in the scope of the forestry sector in Serbia for several reasons. One of the main reasons is the proclamation of almost all species of fungi, forest fruits and medicinal herbs as protected or strictly protected by the Ministry of environmental protection. In relation to this, the Ministry of environmental protection is issuing licenses for collecting and processing of non-wood forest products, without any consultation with the forestry sector. This is something that should be changed in the future.

Criterion 4: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems

The preservation of biodiversity has become the basis of natural resource management. The National Biodiversity Strategy adopted for the period 2011-2018, defines strategic areas, goals and activities for the preservation of biodiversity. Due to the integration of biodiversity conservation into other sectors, it is clearly indicated that biodiversity should be integrated into productive sectors, especially those that directly use and manage natural resources, such as forestry. In order to achieve this goal, the following activities related to forestry are defined:

- The promotion of forest biodiversity preservation, including genetic diversity, through the development of programs for the certification of forests and the best practices for sustainable forestry based on the ecosystem approach;
- The development of forest management measures and guidelines for preventing negative impacts of genetically modified tree species, non-native and invasive species on forests and biodiversity in general.

The biodiversity aspect is considered very important in Forest management planning, since the sector of Nature protection is issuing the terms and conditions for the preparation of forest management plans, and in those terms, specific activities are defined for the maintenance and protection of biological diversity. The largest share of protected areas is occupied by forest ecosystems, and nowadays an area of almost 170.000 ha is under the process of designation as a national park (future NP "Kučaj-Beljanica" and NP "Stara Planina").

In addition to this, all forests managed by PE "Srbijašume" and PE "Vojvodinašume" are certified within the FSC scheme, that considers different aspects, including biodiversity, and independent evaluators in charge of FSC evaluated that forest management is in accordance with the FSC criteria in their annual report.

Criterion 5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably soil and water)

Among other forest functions, the Law on forests defines the functions that are related to the protection of soil and water:

- balancing of water relations and prevention of torrents and flood waves;
- water purification, supply and protection of underground streams and springs with potable water;

- protection of land, settlements and infrastructure from erosion and landslides.

Based on such defined forest functions “protective forests” are defined as a type of special-purpose forests. “Water management conditions” are issued in the process of forest management planning according to the Law on water, which defines activities that forestry sector should plan for the protection of water reservoirs, watersheds, as well as protection of soil from erosion. On the other hand, a protective function of forests is defined in the protection of settlements and infrastructure from water and erosion. These forests are subjected to special monitoring by forestry inspectors, as well by the inspection in charge of water management and the environment.

Criterion 6: Maintenance of other Socio-Economic Functions and Conditions

Forestry is the main source of raw materials for export-oriented wood industry, which together with forestry employs about 53,000 people (RAS, 2021) with exports of over 1.2 billion euros with a tendency of further increase.

The main products of forestry can be divided into those from the state sector, and those from the private sector. Activities from the state sector are divided into products from forest management, nursery production, management of hunting grounds, management of fishing areas, and management of protected areas. In addition to this, the main products of the private sector are products from forest management, nursery production and management of hunting grounds.

According to the data of the Statistical office of the Republic of Serbia, the number of employees in forestry companies in the Republic of Serbia in 2019, was 4,903, which is 1.8% higher than in 2018. According to the different activities in forestry, the total number of employees can be divided into the following categories:

- Establishment of new forests and forest tending – 1460,
- Utilization of forests – 1879,
- Other activities related to forestry – 1564.

In the year 2018, the GVA of the forestry sector amounted to EUR 108.1 million, that is 4.0% GVA of the section of agriculture, forestry and fishing. In 2018, the section of agriculture, forestry and fishing, accounted for 6.3% of the Serbian GDP.

The provision of recreational function became more important during and after the COVID 19 pandemic. In the Law on forests special-purpose forests are defined as forests of importance for human health and recreation, with the function of creating favourable conditions for people’s health and provision of space for their rest and recreation.

Chapter X. Possible areas of further SFM development in the Country

A common vision of the forest sector is stipulated in the Forestry Development Strategy (2006). The existing strategy is not time framed, but some of the provisions are still in line with the situation in the moment of its adoption. It can be stated that the Strategy as a NFP document is outdated. This can be seen in the first line, in relation to different initiatives and policies at the European level: EU Green deal, EU Biodiversity strategy 2030, EU Forestry strategy 2030, new EU Strategy on Climate Adaptation, new European Climate Law, EU directive on the promotion of the use of energy from renewable sources and

other initiatives at the EU and Global levels. A new strategic vision of the forest sector needs to take into consideration the climate change challenges when setting future goals and adequate measures for creating and securing sustainable forest management.

The Forestry Development Program as a strategic planning document is prescribed by the Law on Forests from 2010. FDP defines the directions of development of forests and forestry and supports FDS with an action plan for its implementation. According to the Law on forests, FDP should contain five chapters: forest conditions, objectives and measures for their improvement, the plan of implementation of objectives and measures, with the determined dynamics and financial resources necessary to meet them. In spite of being an important operational document that supports implementation of FDS at the operational level, FDP has not been adopted yet.

In addition to this, the legislative framework, especially at the level of bylaws is not complete. Different bylaws that are prescribed by the Law on forests are still not adopted, and some of the existing bylaws should be amended, or new ones developed. This is a prerequisite for the implementation of the forest policy and FDS. All legislative instruments supporting revised forest policy should be updated based on the new strategic vision for sustainable and resilient forests under climate change and biodiversity challenges.

At the technical level, one of the gaps that is present in the Serbian forestry sector, and an opportunity on the other hand, is the preparation of Management guidelines for the main tree species for different management types. The preparation of these guidelines started within the project „Innovative Forest Management Planning“, and are amended through the project „Contribution of Sustainable Forest Management to a Low Emission and Resilient Development“. Those guidelines should guide management practice to fulfil the main objectives of the strategic documents using the concept of close-to-nature forest management. The management guidelines for different management types should be praxis-oriented management instructions. They describe activities and measures using numerical parameters for the implementation of management targets since stand creation until the end of the production period. The instructions are intended for forestry practice and are written in simple language with a lot of numerical indicators. Nevertheless, those guidelines could be considered an important climate change adaptation instrument. The guidelines are not fully completed for all management types (7 guidelines are missing) and we are lacking implementation assessment on their positive and negative outcome on SFM.

One of the main gaps can be seen in the process of forest management planning and definition of forest functions. Namely, in this process for one stand (as the main planning unit) only one priority forest function, or the dominant one is defined, but other functions are not recognized. An example of this is a stand in a protected area, where the main function is „Protected area“, while other functions that are present within the same stand (i.e. erosion protection, productive function, recreational function) are not recognized at all. The methodology for identification of all forest functions using a GIS-based solution could be one of the important tools for communication with forest related sectors (Agriculture, Spatial planning, Infrastructure development etc.). Although a pilot methodology has been created and tested on small scale forest areas, upscaling and eventual modification of this test methodology has not been conducted yet.

Serbia does not have a landslide cadastre that should also serve as the basis for planning in the forestry sector. This is of great importance for planners in the forestry sector, especially during the planning and construction of forest infrastructure, as well as planning and implementation of forestry measures on the steep slopes. The management strategy for such sites is not in place, although a pilot landslide identification and management strategy has been created at one pilot management unit.

Biodiversity assessment and monitoring are missing in the process of Forest management planning. Although the draft methodology for biodiversity assessment in FMP was tested on pilot management units, final assessment criteria are not developed. Presentation and broader discussion about preliminary results are not conducted. Best praxis from other countries regarding data collection on biodiversity assessment would be of great importance for fine tuning of the draft methodology towards SFM in Serbia.

The Natura 2000 methodology for forest sites and their integration into forest management planning is missing, while the forest sector is not sufficiently included into the process of their future management. Regional cooperation and exchanging experiences with other countries would be of great importance for proper integration of N 2000 sites into forest management praxis.

The monitoring and evaluation of the implementation of 10 years management plans shows that their implementation is at a low rate, and can be evaluated as insufficient, especially in the time when we are facing an energy crisis, as well as various demands from forests, other than wood production.

The Forest and Forest Land Cadastre in the Republic of Serbia is currently facing numerous problems and shortcomings, the most important ones being incomplete records on the actual state of the cadastre, out-of-date management of cadastral changes, out-of-date information on changes in land use, and often unmarked property boundaries between different owners. These problems are especially pronounced in the case of private forests. Forest management planning departments should create a modern GIS based updated ownership information system.

Climate risks can be reflected in those that affect immediately, and those that have a long-term impact. As one of the examples of current climate risks, we can see forest fires that can occur at any time of the year, but certainly mostly during the vegetation season. Climate risks that have a long-term impact include water shortages, drying of forests, plant diseases and insects. The relationship between climate change and forestry is two-fold. On the one hand, climate change through changed environmental conditions affects forests and forestry, while forests, with their existence, and forestry workers with their activities certainly affect the climate change sector. If we observe climate change only through the emission or absorption of gases with the greenhouse effect, forestry is certainly the sector with the greatest potential for the absorption of greenhouse gases, primarily carbon dioxide. Climate change and its effect on forests in the current planning system is not taken into consideration during long-term management planning. Since we are witnesses of climate change, its impact on each management type should be taken into consideration during long-term planning at the level of each management type and its development phase. Management guidelines for the main tree species should guide praxis to create vital and vigorous trees in each stand with developed crown and root system. Such trees could reach target diameters early and are more resilient in comparison to the rest of the stand.

A modern and integrated forest fire information system is lacking. Creating a new system of early warning based on new technology should be an important mitigation instrument in drier and rainless summers especially in pure coniferous stands.

A proper selection of tree species that correspond to the changed climatic conditions defined by climate scenarios can ensure long-term proper growth and development of forest ecosystems and thereby also the fulfilment of social needs in the economic, ecological and social sense for future generations. Following this, wood as a product of SFM is not to a high extent part of circular economy, although the state is directing its policies towards this process. The cascading use of wood should be one of the imperatives of the country in the following period. Forest policy support and information (knowledge) transfer on the proper use of limited wood recourses is essential for the contribution of the forestry sector to the low-emission economy in Serbia.

The management of private forests is one of the large gaps in the Serbian forestry sector. According to the 2009 NFI, the condition of these forests is worse in comparison to the condition of State-owned forests. On the other hand, the number of owners (estimation - up to 800.000 owners) represents a big challenge for the State in order to improve the management of these forests. Socio-economic characteristics of private forest owners (old people or their heirs who live in urban areas or abroad) do not have the same interest for the management of forests as their predecessors. Taking into consideration that in Serbia almost 50% are small scale private forests, securing their active and sustainable management could be considered as a good opportunity for achieving ecological, economic and social goals in the era of climate change with low emission sustainable development. Due to a socio-economic change of private forest owners, new policy instruments (financial, informative and legal) should be considered as an option for turning challenges into great opportunities.

Another challenge is the establishment of new forests, where the main issue is the inaccessibility of agricultural land of a lower site index class, due to the administrative and legal constraints. The Law on agricultural land defines that afforestation can be done on agricultural land, only if it is envisaged in the Agricultural management plan of the Republic of Serbia, which is still not adopted, or there is a need for approval by the Directorate for Agricultural land, which is time consuming and sometimes without any decision. In addition to this, the leasing of State agricultural land where the actual condition is forest (parcel overgrown with forest trees) and that is not registered in the cadastre leads to deforestation.

Another topic that should be mentioned is the current status of State enterprises for forest management. Two enterprises for forest management operate in the Republic of Serbia, as well as four enterprises of National Parks that are managing forests in the area of National parks. Those enterprises are under strong political influence and as a result of this, overemployment rate is one of the factors lowering their economic performance and negatively influencing their capacity for SFM.

Low stakeholder participation in the process of forest management planning can be seen as another gap in SFM, as well as inter and cross sectoral participation. In the process of adopting a Forest management plan, the public has an opportunity to read and comment the plan within 30 days at the website of the Ministry of Agriculture, Forestry and Water Management in the form of consultations, but usually there are no comments or objections from the interested parties. In addition to this, participation of different sectors, except the Water management and Nature conservation that are parts of the FMP process, is missing.

Spatial planning, as a sector in charge of different activities and planning in space does not include forestry activities in its planning process. Hence, the Spatial plan of the Republic of Serbia still envisages the forest cover of 41.4%, without the consultation process with the forestry sector, and taking into consideration the issues regarding the available areas for afforestation. The operational plan for implementation and exact locations for afforestation are missing. The afforestation methodology is missing especially site mapping that should take tree species selection into consideration in accordance with climate change scenarios for a certain region in Serbia.

The applied research in forestry is not at an adequate level, especially under the framework of climate change with an impact on forestry and other sectors. The research agenda and status of research institutes are not defined. They are financed partly by the state, but most of the financing is coming from commercial activities. Such a research set up creates an environment in which institutes use their research capacities in a way not related to the forestry sector.

The nature protection sector and designation of protected areas have specific impacts on the forestry sector and SFM. Namely, the consultation process is not done during the process of designation of a protected area, only in the process of administrative procedure of designation. This process affects the

forestry sector in Serbia to a high extent, since the largest share of protected areas is occupied by forest ecosystems, and restrictions proposed in the Act on proclamation affects forestry activities. In addition, the proclamation of National Parks is not done in accordance with the IUCN criteria, although it is officially stated that it is. Another issue regarding the protected areas is the management of PAs, which are sometimes managed by a special PE – in case of National Parks. In most cases, they are managed by PE “Srbijašume”, and sometimes by Municipal enterprises, or in certain cases by NGOs. In the cases when the manager of a PA is not a user of the forests, certain issues in implementing FMP are emerging.

Another gap in the Serbian forestry sector could be seen in the implementation of the EUTR regulation. The issue related to this regulation related to SFM is illegal transport of wood and wood products, as a follow up of forest management. The highest discrepancy can be seen in the control of this process, having in mind that although forests are managed according to the SFM principles, illegal transport abolishes all efforts of the foresters. The creation of a sustainable organizational set up for introducing the EUTR procedure should be a contribution of SFM in terms of legality to Serbian timber trade on the national and international markets.

Continuous education after the termination of formal education is in its initial phase. The Chamber of forest engineers has been created and the system of training has been in place. The long-term organizational structure is based on different topics and the training of trainers' structure has not been prepared so far. Cooperation with similar institutions in Europe has not been established and best practice example is still pending. Demonstration and research plots have been established across Serbia for practical knowledge transfer in the field. Long term strategy and sustainable organizational set up are missing along with a clear funding option. Capacity building and cooperation with regional and EU institutions is not defined at the moment.

As a results of the interview with the Forest Directorate, the main fields of activity in the following period are defined as follows:

1. Close-to-Nature Forest Management
2. Developing/updating the Legal framework
3. Developing/updating the Strategic Framework
4. Establishing new/updating the existing Organizational framework
5. Implementation of the EUTR/FLEGT Regulations
6. Sustainable Forest Management of private forests

Chapter XI. Conclusion

The forestry sector in the Republic of Serbia has been constantly improving in the previous period. The improvement started after the year 2000, and establishment of the Forest Directorate as a separate administrative unit within the Ministry of Agriculture, Forestry and Water Management. Different international projects started the process of preparation of strategic and legal documents that are in force at this moment. Updated long-term sector vision was created throughout the new Forest Strategy as well as updated policy instruments supporting its smooth implementation. Public participation should be secured in the creation and implementation of this process. The forest strategy should have a clear monitoring mechanism in order to fine tune some deviations from defined objectives or selected measures.

Particular emphasis is placed on management issues in private forests, which occupy about one half of the total forest area and are characterized by a poor state of forests, fragmented holdings and un-

solved property ownership issues. These problems make forest management even more complicated, together with “new” owners of larger estates (churches, cooperatives, large landowners) and the state’s interest to participate in encouraging the development of the private sector to achieve the goals of sustainable development. The creation of targeted forest policy instruments and stimulation of organization of private forest owners’ associations could be one of the biggest challenges, but at the same time the greatest opportunity for securing sustainable forest management.

For the past 20 years, the main characteristic of planning in the forestry sector was the lack of stakeholder participation in the decision-making process. At this moment, the preparation of different by-laws that follow the Law on forests is in progress, and, in the first place, a bylaw that regulates forest management planning as the most important process in forestry. New forest legislation should take climate change challenges into consideration and be flexible at the technical level in order to have a prompt and adaptable approach.

A new Strategic document for the forestry sector is in the process of preparation. In addition to this, the draft law that regulates timber trade in line with the EUTR regulation will be developed until the end of first quarter of the year 2023.

The lack of appropriate inter-sectoral and cross-sectoral cooperation slows down the fulfilment of the tasks set up in the strategic documents of different sectors and intensifies conflicts between different stakeholders. Regional cooperation should be established in order to create a forest exchange platform. Best practice exchange on different topics in the region will be valuable so that other countries could benefit from the experienced implementation problems.

The integration of new elements into Forest Management Planning in forestry praxis tested on a pilot area should be one of the challenges in the future. Target oriented forest management guidelines, site mapping, forest function, and land slide cadaster should be further elaborated on and capacity building should be prepared and executed with forest praxis.

Continuous education as an instrument of implementation of new elements in forest management planning is at the development stage. Long term education strategy is one of the main instruments for securing sustainable forest management in the future and could be considered as one of the important climate change adaptation instruments in forest management.

Chapter XII. Recommendations

FDS with the action plan should be followed by a revision of forest legislation and bylaws that systematically support the implementation of sectoral objectives and measures which lead towards the long-term vision of the forest sector which contributes to the carbon emission sink and supports the climate change strategy. As a supporting measure for forest policy implementation sufficient funding in the Fund for forestry development should be secured for supporting afforestation, conversion measures, forest fire prevention and intervention, support of the use of biomass in case of replacing fossil fuels, as well as proper adaptive forest management during the whole production period.

Improving the road network should be the most prioritized task, as it allows for the fastest return on invested funds and creates optimal conditions for the performance of all works in forestry. The creation of a unique cadastre of forest roads condition with an overview of the location of forest roads in a spatial platform is one of the tasks in the future. The evaluation of the quality of forest roads and their categorization with proper planning of the entire new forest road network is one of the forest management goals in the future.

Improving sustainable forest management in protected areas can be achieved only through prior identification and application of the national criteria and indicators for establishing parts of forest ecosystems as PAs, as well as defining and implementing guidelines for sustainable forest management in PAs, in accordance with the generally accepted international criteria and indicators. It is necessary to improve the system of legal and physical protection of forests in protected nature areas, determining adequate compensation to the forest owner for the refused or limited use and establish a model of PA financing. Taking general interests into consideration, the most favourable form of protected areas management must also be identified together with essential local communities and forest owners. The integration of new elements in forest management planning should be implemented in forest praxis. The capacity building for their implementation should further strengthen efficient implementation of the climate change adaptation approach.

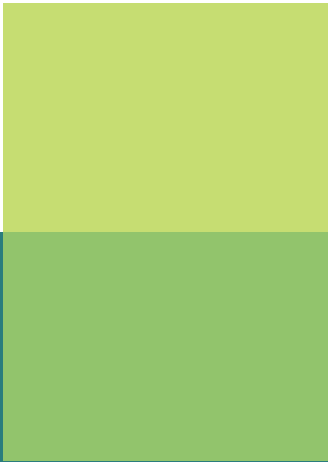
The main prerequisites for forestry development are permanent learning and the application of new knowledge and new technologies at all levels. Therefore, the education system should be in line with the needs of the profession, both in terms of quality and quantity. The main objective to be attained in the coming period is to educate competent professionals/skilled staff in the forestry sector. This can be achieved by developing a forestry education strategy as the base for a modern educational system that is consistent with the needs of forestry development in the changed socio-economic, scientific and technological conditions.

The cross-sectoral cooperation and policy harmonization need to be established between the forestry sector and forestry related sectors regarding the minimization of conflicts especially with spatial planning, agriculture, energy, biodiversity, nature protection and cadastre agency. In the first place, this should include better communication between different institutions and organizations, including a better exchange of data and coordination of policy and legislation measures to create a common magnitude of positive effects on forest and climate change policy. Regional cooperation regarding the exchange of experience from the implementation of different elements towards SFM is one of the important possibilities for the best practice exchange option. Further strengthening of the Chamber of Forest Engineers as the instrument for sustainable forest management via knowledge transfer is of essential importance in the future. The establishment of regional cooperation among similar institutions from the region or EU is of value for further improvement of the Chamber capacity.

In this regard, institutional and material preconditions should be created for the establishment of the information exchange system and efficient cross-sectoral and inter-sectoral communication at the national and international levels. Therefore, the development of a public relations strategy of the forestry sector will enable publishing and informing of the general public on the forest policy goals, dissemination of general information and raised awareness on the importance of forests.

Annex 2. Common topics selected by the majority of WB countries

Gap/ Country	Albania	FBiH	Kosovo*	North Macedonia	Montenegro	Republic of Srpska	Serbia
Legal and Institutional framework	x	x	x	x	x	x	x
Forest management and biodiversity assessment and monitoring (close to nature forest management)	x	x	x	x	x	x	x
Lack of human capacities	x	x	x	x	x	x	x
Management of private forests		x	x	x	x	x	x
Insufficient financial resources	x	x	x	x	x	x	x
Cooperation with nature protection sector	x	x	x	x	x	x	x
Development of FIS	x	x	x	x	x		x
EUTR/FLEGT development	x				x	x	x



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