Ecosystem of the Forest Landscape and Conflict of Interests of Stakeholders

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Abstract. **The paper presents the results obtained by means of survey of stakeholders in Teteven Municipality, Bulgaria, from the viewpoint of use of forests and forest recourses. The main ecosystem services divided into wood products (timber production, fuel wood and biomass), supporting services (biodiversity maintenance, water quality, tourism, hunting and recreation), and non-wood forest products relevant for the object of the present research are analysed. The conflicts of interests are identified considering stakeholders united into groups of "environmentalists", "entrepreneurs", "stewards" and "citizens".**

Keywords**: ecosystem, management, forest landscapes, Teteven, Bulgaria, INTEGRAL.**

I. Introduction

A popular concept about the use of forests is that they are a source of timber, but they also have other production functions. They give us many other products such as mushrooms, berries, medicinal plants, aromatic plants, etc. Managers' understanding of the importance of these functions is a prerequisite for sustainable development of the forest ecosystems. The products of functioning of forest landscapes have ecological, economic and social value and significance, these issues are considered in the studies by Paligorov, Yovkov, Georgieva, Galev, Kolev, Shuleva et al. [3-7, 11-16]. Their value has to be sustained by using development policies in the management of forest landscapes. Often their public, economic and ecological value, role and importance are underestimated by the authorities managing forest ecosystems.

The aim of the current research is to analyze the information about the preconceptions and attitudes of the stakeholders regarding all ecosystem functions of the forest landscapes. In the paper the results obtained by means of surveys and the analysis of the structural factors that affect the sustainable management of forest landscapes are presented. They are necessary for the management of forest landscapes, when the conflict of interests in the process of usage of public goods has to be considered. The survey was conducted in the period from September 2012 until February 2013. The research is a part of the INTEGRAL Project, an International Scientific Project for Future-Oriented Management of Forest Landscapes.

The selected object (Teteven Municipality) is a typical forest ecosystem suitable for study in terms of the use, protection and management of its ecosystem functions. The statistical data about Teteven have been collected by the Executive Forest Agency and they refer to year 2010.

II. Object of Study

Teteven Municipality is named after its administrative centre – the town of Teteven (10,000 inhabitants). It is located in a mountainous area in Lovech District in the North Central Region of Bulgaria on the northern slopes of the Balkan Range and covers an area of approximately 697 km^2. The municipally is crossed by the River Vit. The distance from the town of Teteven to Sofia is 120 km. The municipality borders on 10 other municipalities of Lovech, Sofia and Plovdiv regions. These are the municipalities of Jablanica, Lukovit, Ugarchin, Lovech, Troyan, Karlovo, Anton, Pirdop, Zlatitsa, Etropole and Pravetz.

The codes by the NUTS classification related to Teteven Municipality are presented in Table 1.

TABLE I
THE CODES BY THE NUTS CLASSIFICATION RELATED TO TETEVEN MUNICIPALITY

Level	Codes	Description
NUTS 0	BG	Bulgaria
NUTS 1	BG3	Northern and South-East Bulgaria
NUTS 2	BG31	North-West Statistical Region
NUTS 3	BG315	Lovech District
LAU 1	LOV33	Teteven Municipality

The studied area represents a region with a specific cultural landscape. The cultural landscape is characterized by dispersed rural settlements and traditional land use. It is a highland territory with different land-use patterns. The area is also a typical example for representing the conflict between nature conservation and commercial forestry. The area is forest-agricultural with forests in the south part and agricultural in the north (see Table 2). The northern part of the forest area is covered by beech and fir-beech forests, but the lower parts – by oak-hornbeam forests. Agricultural areas range from middle to low productive. It should be stressed that it is a region with a specific cultural landscape, especially the surroundings of Ribaritza Village, where the landscapes are characterized by dispersed rural settlements and traditional land use – small private owners. Therefore, it represents a unique opportunity to study the relations between human and landscape.

TABLE II
APPROXIMATE AREA DISTRIBUTION OF THE LANDSCAPE

Types of Areas	Area (ha)	% of Area
Teteven Municipality Area	69,709.10	100%
Forest areas under conventional management	38,201.40	54.82%
Agricultural land	20,554.70	29.49%

Types of Areas	**Area (ha)**	**% of Area**
Urban areas	1,463.60	2.10%
Water areas (lakes)	266.50	0.38%
Areas for transport	127.10	0.18%
Areas for mining	19.90	0.01%
National park "Central Balkan"	9,075.90	13.02%

The table above shows the structure and the types of areas. Most of the municipality consists of areas that can be used for forestry purposes (the forest areas and the national park cover 67.84% of the total area). This fact conditions the status of the region as an important center for the development of the timber industry. However, well-preserved forests and beautiful landscapes create favourable conditions also for tourism-related activities. The southern part of the area (almost entirely covered by forests) is a part of the Central Balkan National Park. Areas for development of agricultural production are relatively limited (29.49%). Unfortunately, they are not used effectively due to the aging population and the fragmentation of the land area into small fields and meadows.

The distribution of the land by ownership type is summarized in Table 3. It is evident from the data set presented in the table that there is a variety of the types of property in the municipality. Municipal private property occupies the largest share in the distribution of land by the type of ownership (27.02%). Private property occupies 25.03% of the municipal territory. State private property is the third largest segment in the ownership structure; it occupies 19.43%. State public property occupies 18.53% of the municipal territory. Other types of property have smaller shares in the total area of the municipality.

TABLE III

LAND OWNERSHIP STRUCTURE

Type of Ownership	**Area (ha)**	**% of Area**
State public	12,916.0	18.53%
State private	13,547.7	19.43%
Municipal public	739.9	1.06%
Municipal private	18,889.2	27.02%
Private	17,450.5	25.03%
Managed by the municipality	3,840.6	5.51%
Mixed	1,467.7	2.10%
Legal persons	695.3	1.00%
Religious communities	162.2	0.23%
TetevenMunicipality Area	**69,709.1**	**100.00%**

The distribution of forest areas within the municipality according to the type of ownership is as follows:

TABLE IV

FOREST OWNERSHIP STRUCTURE

Type of Ownership	**Area (ha)**	**% of Area**
Forest area total	47,277	100.00%
State forests	22,106	46.76%
Municipal forests	17,964	38.00%
Private forests owned by individuals	6,753	14.28%
Forests owned by legal entities	454	0.96%

The calculated data show that the largest share in the structure of forest ownership of forest areas pertains to the state forests (46.76%). Municipal forests account for 38.00%. The share of private forests is 17.4% of the total forest area in the region. Forest planning is mandatory for all forest owners. Development of plans for multipurpose forest management is one of the possibilities to engage stakeholders on the national level. It is implemented in the Ribaritsa Forestry and some other areas of the municipality. An initiative in this area is manifested by the neighbouring municipality of Jablanica. Developing forest management plans as a form of scientific organization focused on forests takes a special place in the management of the processes related to reproduction and use of forests. There are possibilities for forest land consolidation due to the great similarity of land use and ownership of land, including forest management in the Central Balkan National Park. This can be achieved by including the neighbouring municipalities that are within the Central Balkan National Park.

Teteven Municipality forest area occupies the northern slopes of the Balkan Range and some hilly and foothill areas covering approximately 473,000 ha. The southern territories of the municipality belong to the Central Balkan National Park, which protects a unique abundance of forests, wildlife, landscapes, rock formations and waterfalls. The park is a favourite place for recreational activities for all Bulgarians and favourite destination for tourists, both local and foreign. In the vicinity of the park local people develop traditional livelihoods and crafts. It is vitally important to preserve this unique environment adhering to the principles of sustainable tourism and resource use.

The territory is characterized by a very high percentage (92.1%) of the forested area. The reserves for reforestation are limited to only 1.2% of the total forest area. This area of non-forested land is suitable for wood production. Not productive areas mostly occupy karst terrains with partial coverage by trees and shrubs, but with no importance for wood production.

TABLE V

DISTRIBUTION OF FOREST AREA BY TYPE OF LAND

Type of Land	**Area (ha)**	**% of Area**
Wooded area	44,030.8	92.1%
Unforested area suitable for wood production	586.0	1.2%
Area not suitable for wood production	3,195.7	6.7%
Total forest area	**47,812.5**	**100.0%**

The distribution of forest areas in the municipality by type of forests is shown in Table 6. The share of high deciduous forests in the total forest area is 61.30%, which is a good basis for the development of wood production processes in the region. Forested areas in need of reforestation occupy 20.57%. These forests are less productive, but their importance for the nature conservation and protection of flora and fauna should not be underestimated. Coniferous forests take up the third largest share in the structure of woodlands and combined with the high deciduous forests they represent 76.08% of the total forest area in the municipality. These facts lead us to the firm belief that the forest areas of the region have a significant potential, which is essential for sustainable development of the municipality.

TABLE VI
DISTRIBUTION OF FOREST AREA BY TYPE OF FORESTS

Types of Forests	**Area (ha)**	**% of Area**
Coniferous forests	7,066.2	14.78%
Deciduous high stem forests	29,302.6	61.30%
Forests eligible for reforestation	9,838.0	20.57%
Forests eligible for conversion	1,528.3	3.19%
Low-growing forest	77.4	0.16%
Total forest area	**47,812.5**	**100.00%**

The distribution of forests according to their main functional purpose is shown in Table 7. The largest share is taken by the forests with wood productive and ecological functions.

TABLE VII
DISTRIBUTION OF FORESTS ACCORDING TO THEIR MAIN FUNCTIONAL PURPOSE

Main Functions of Forests	**Area (ha)**	**% of Area**
Forests with wood productive and ecological functions	30,864.6	64.55%
Protective and recreational forests	7,501.3	15.69
Protected forests	370.7	0.78%
Central Balkan National Park	9,075.9	18.98%
Total forest area	**47,812.5**	**100.0%**

In conclusion it may be noted that the forests of Teteven municipality are located on the northern slopes of the Balkan Range and are typical for the area in terms of their tree species composition; they are representative for Bulgaria in terms of the ratio of state to privately owned forests; the territory is characterized by a great diversity of interests of various parties concerning the profit and benefits that the forests can provide, and all these interests require to be considered. The region has long established traditions in the management and maintenance of beech forests.

Considering the forest resources and services in the area, these forests provide the means of subsistence of the local population, especially in the field of timber harvesting and timber processing, picking of mushrooms, herbs and berries. Over the last couple of years the region's favourable conditions have also stimulated the development of tourism, and new business activities have been considered focusing on the production and processing of non-timber forest products.

III. RESULTS AND DISCUSSION

A. List of Ecosystems Services Relevant for the Teteven Municipality

1. Provisioning Services - Wood Products

Timber production. According to statistics from the forest surveys, a sustainable timber harvest level is maintained within the territorial scope of Teteven for a long time. It is an indicator of proper maintenance and management of forest resources. Timber had been identified by forest owners and managers in Teteven as the main forest product obtained by active management. There was no difference between State Forest Range and the Municipal Forest Administration. All respondents claimed that timber is a product of primary relevance. Sale of timber provides approximately 95% of the income and revenues in State Forest Range Teteven budget and 25% of incomes in Municipality Teteven budget.

Fuel wood. Fuel wood is also identified by all respondents as the forest product obtained by active management. All respondents from State Forest Range and Municipal Forest Administration considered fuel wood as a product of primary relevance for the country population. For most of the private owners the fuel wood is a product of primary relevance. This is particularly true considering smaller private forest owners, whose main aim is to deliver fuel wood for heating of family houses from their own forests without any payments.

Biomass. All respondents identified forest chips and pellets as the forest product obtained by active management, especially for the future. There remains a strong interest in fuel wood biomass among the population in the form of fuel wood. However, even though the respondents stated that they expected increased demand for biomass in the future, most of them identified forest chips as a product of secondary relevance.

2. Supporting Services

Biodiversity maintenance. Vegetation in the region is diverse in terms of tree and shrub species and herbaceous flora. Forests are mainly dominated by European Beech (*Fagus silvatica*, L.). *Quercus cerris* or *Quercus petraea* and *Carpinus betulus* dominate in the lower parts, but the karst terrains are dominated by *Carpinus orientalis*. Spruce (*Picea excelsa*) and fir (*Abies alba*) grow at the ridge of the mountain, and *Pinus peuce* grow in the area of peak Vejen. In the alpine zone *Juniperus communis* had occupied large areas in the past, but grassland complexes have largely destroyed it. Along the rivers there are populations of *Alnus glutinosa*. The most widespread bushes are *Crataegusmonogyna*, *Rosa canina*, *Syringa vulgaris*, *Rubuscaesius*, *Rubusidaeus*, *Sambucusnigra*, *Vacciniummyrtillus*. The following herbaceous species are collected as medicinal herbs: *Atropa belladonna*, *Hypericumperforatum*, *Primulaveris*, *Thymus serpyllum*, *Veratrumlobelianum*, *Origanumvulgare*, *Tussilagofarfara*, etc.

Water quality. The territory is rich in water resources. The area of rivers and watersheds in the municipality is 2,813 decare, which is 0.4% of the total territory. It is the area where the River Vit flows, its tributaries and other smaller rivers and streams. These rivers are characterized by snow-rain regime and high waters in autumn and winter. The flow module of the River Vit is 27.90 litters per second in the high mountains parts, but this module goes down to 4.06 in the range from 300 to 600 m a.s.l. An important role in the genetic structure of the flow is played by karst waters springing from the Triassic and Cretaceous lime stones in the northern part of the municipality. The settlements in Teteven municipality, with the exception of the village of Babintsi, are water supplied with catchments and mountain catchments. In some of the settlements, the water flow is not sufficient during the summer months and, therefore, alterative solutions for underground water sources are being investigated. A sewerage system is partially developed only in the town of Teteven. The remaining towns and villages use cesspits and cesspools. One collector of the future municipal waste water treatment facility has already been constructed.

Tourism. Tourism plays an important role in the development of Teteven Municipality. This region characterized by remarkable physiographic and biologic diversity includes a broad spectrum of vegetation, natural sights and phenomena. The case study area is characterized as a developing mountain tourism destination due to its rich natural resources, its good accessibility and rich heritage. On this basis it is possible to practice various forms of alternative tourism. Yet it should be stressed that the high value and uniqueness of the natural environment are leading for the development of tourism. Part of the area has a conservation value. The presence of a national park and reserves, ancient forests, clean rivers and springs, beautiful waterfalls and numerous caves contributes to making the area a desirable tourist destination.

Hunting. Hunting plays an important role as a hobby of local population and as a well-organised activity in State Forest Ranges and State Hunting Ranges in the North-Central Forestry Enterprise Lovech and in Lovech Regional Directorate. The average annual income of Bulgaria from hunting during the last 10 years is more than 10-13%. There are established traditions for organised hunting and wildlife management in Bulgaria and a good potential for development of this activity on the territory of Teteven Municipality.

Recreation. The forests of the category "Protective and Recreational" cover 7,501.3 ha (15.7%) of the total forest areas. In principle, this is a relatively small proportion, but given that the region has a high percentage of forest cover we come to a conclusion that all forests have a high protective and recreational potential. In the multifunctional forest management each forest stand has been studied considering all its features. Using this approach, it will be possible to determine the actual importance of forests in the region in terms of their protective and recreational functions.

3. Provisioning Services - Non-Wood Forest Products

Non-Wood Forest Products (NWFPs – Food). With regard to non-wood forest products in Teteven respondents identified herbs, mushrooms, lime-blossom, hay, berries and other non-wood products. The most widespread bushes are *Crataegusmonogyna*, *Rosa canina*, *Syringa vulgaris*, *Rubuscaesius*, *Rubusidaeus*, *Sambucusnigra*, *Vacciniummyrtillus*. The following herbaceous species are collected as medicinal herbs: *Atropa belladonna*, *Hypericumperforatum*, *Primulaveris*, *Thymus serpyllum*, *Veratrumlobelianum*, *Origanumvulgare*, *Tussilagofarfara*, etc. The products used for food mentioned by the respondents mainly include game meat, berries, mushrooms and nuts. Some of respondents from the State Forest Range have mentioned only game meat as the product obtained by active management. Forests in Teteven are intensively used for mushroom, forests fruits and nuts gathering. Mainly local residents often visit the forest for collecting mushrooms, raspberries, strawberries, blueberries, cranberries, hazelnuts, etc. Berries and mushrooms are not purposefully cultivated by forest owners with the intention of sale. Those forest products were considered by all forest managers as involuntary products of their management with no financial benefits for them. Anyway, most of forest owners consider forest fruit gathering as important functions provided by their managed forests, which should be provided in the future. There is a long established tradition of the free collection of berries in the mountain regions in Bulgaria. Thus, it is assumed that the tradition for gathering of forest fruits for self-subsistence will continue at the same or higher level in the future.

B. Ecosystem Services – Conflicts and Cooperation

The results shows that the forest managers in the region of Teteven gain much greater benefits by actively managing timber production, fuel wood or other biomass for energy production (chips), 80–100% (see Figure 1). The forests are used much less, up to 50%, for the benefits are gained from non-timber forest products (mushrooms, berries, medicinal plants, aromatic plants, etc.).

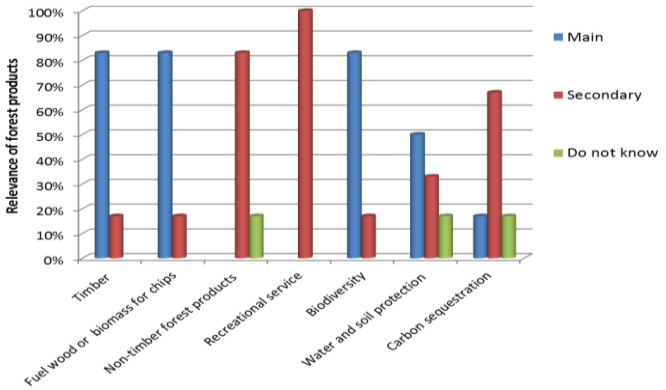

Fig. 1. Relevance of forest products and forest ecosystem services

The managers of forests in Teteven consider, in the first place, timber production as a source of direct benefits and highly value the importance of forests in biodiversity conservation – over 80% of the responses. The forest managers surveyed regard such functions of the forest as non-timber forest products (mushrooms, berries, medicinal plants, aromatic plants, etc.) and recreational service (i.e. hiking, mushrooms or chestnuts/herbs picking, landscape view, bird watching, ornamental plant collection) to be of secondary importance, and some of them cannot give a definite answer to this question. This shows some underestimation of some of the important functions of the forest ecosystems, namely those that are supposed to implement sustainable forest management. Considerably less attention is paid to the potential of the forest areas to produce oxygen. This is probably due to poor awareness and the difficulties in measuring this indicator, and, therefore, it is difficult to comprehend this specific economic benefit of forest ecosystems. This indicates the need to improve the information environment and focus on both the managers and all stakeholders in order to make better use of all the functions of the forest areas in a balanced way. This balance should provide the opportunities for all stakeholders to obtain benefits without harming the interests of any of them.

Attitudes to the future show that in the next 10 years forest managers are not willing to change the direction of their management decisions and their respective impact on forest management (see Figure 2). Both at present and in 10 years' time, they assign the same ranking to the relevance of forest products and ecosystems.

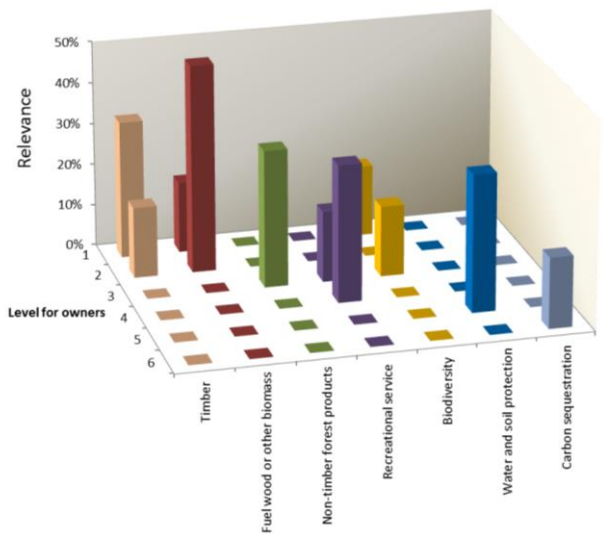

Fig. 2. Relevance level (1st–6th) of forest products and forest ecosystem services – after 10 years

These results repeatedly demonstrate poor understanding and appreciation of all ecosystem functions of the forest areas and their relation to the economic activities outside the major logging activities. It is important to note that there is no change in the results and predictions of the managers for a relatively long period of 10 years. They do not forecast and do not instigate the changes in the use of forest areas, which, in turn, suggests the presence of fear of changing the status quo in the management of such ecosystems.

Leading economic sectors in Teteven Municipality are wood industry, manufacture of windows, furniture, office equipment and kitchen equipment, processing of animal products, manufacture of brushes, blinds and awnings, parts for the electronics industry, as well as tourism. About 90% of the economy is concentrated in the private sector. 85% of the companies are micro or small-sized enterprises. They are concentrated in the fields of trade and services, catering, construction and transport. Small enterprises are oriented towards activities bringing quick revenues like tailoring, carpentry, dairy and meat processing. More than 68% of the territory of the municipality is covered by forests, a major resource for its development and the basis for the development of logging, wood processing, and tourism. Tourism sector is essential for the development of Teteven Municipality. There are numerous archaeological sites (remains from pre-historical times, fortresses, villages, bridges, roads); more than 30 caves, architectural landmarks (houses from the Renaissance), religious sites (churches, monasteries), and museums. Other factors that may be appealing to the tourists include local crafts, as well as traditional folklore and cuisine.

C. Conflicts of Interest regarding Forest Ecosystem Services

In the process of developing the Plan for Multifunctional Forest Management of the territory of the municipality of Teteven several major conflicts between stakeholders were identified. During the interviews and meetings related to the plan monitoring, some of these conflicts re-emerged, but in a much milder form. This can be explained by adopting a different position or viewpoint, especially in light of the time that has passed, and the changes that have taken place in our society. The opinions obtained during the interviews and working meetings make it possible to outline the areas of possible conflicts that may be summarized as follows:

- The group of the "environmentalists" which unites some of the forest owners, mostly owing small-sized, scattered properties, one environmental organization named Nature - Ribaritza, the group of some of the older citizens of Teteven who want to preserve nature, as well as part of the group of hunters and fishermen who want to have plenty of game and fish in order to pursue their hobby. This group believes that the impact on the environment (forests) is too significant, and the use of forests and all natural resources should be restricted in order to sustain resources for the future generations.
- The group of the "entrepreneurs": mostly those who harvest and process wood, but also hotel owners, owners of tourist facilities such as ski tracks, tennis courts, swimming pools, restaurants and entrepreneurs in the field of alternative tourism, i.e. mountain biking, off-road, all-terrain vehicles (ATVs), etc. who provide means of subsistence and jobs. This group also comprises large private forest owners and the municipal forest property. Their objective is to reasonably use nature and the resources it provides (including forests) in order to generate income and to increase the welfare of the population, to improve the infrastructure, etc.
- The group of the "stewards" of forests and their resources: foresters whether with a private business or working in the administration of the municipality or in the state forestry offices. Part of the forest owners who have professional attitude to their property also belong to this group because of their relation to the profession of a forester and to the forest management traditions of the past. Actually, the role of this group has evolved to the position of a mediator between the other two, as well as of a link with the other groups of the community.
- The largest group is the group of the "citizens" who make use of the fuel wood, timber for repairing and maintaining their houses, and fresh air, as well as enjoy beautiful views of the mountains. For this group, the use of forests and their resources is an activity like any other, but they consider it rather difficult and unattractive, and it is associated with certain negativity related to illegal encroachment involving illegal fellings and poaching. This group believes that the "stewards" manage the forests well, but succumb to the pressure of the "entrepreneurs" who often receive help or protection by politicians.

It should be noted that the general consensus among these groups is that the greatest power to influence society as well as the forests belongs to politicians, especially at the national level, who determine the direction of the development of the economy. They have their levers of influence at the regional and local levels, involving, in the first place, the appointment of the management teams who are not elected by the community.

IV. Conclusion

On the basis of the research the following important ecological factors with an impact on management of forested landscapes and which are potential sources of conflict of interest of stakeholder shave been identified:

- State of forest and structure of forest stands. In the perception of the surveyed forest managers, the state of forests is the main factor influenced by their silvicultural practices. At present there is a large stock of wood of decline age in the forests and a high percentage of incidental felling. Expected changes in wood stock, age class structure and tree species composition as well as predicted effect of climate change, calamitous situations will still significantly affect the forest management practices.
- The impact of climate change on forestry. In Bulgaria there are frequent abrupt changes in weather, temperature variations, increased intensity of storms and strong winds. In combination with other different harmful factors it causes damage of forests and high percentage of incidental felling. A principally important task for the management of forest resources in Bulgaria, particularly in the part of the country with an altitude of up to 800 m, is the implementation of the activities listed in the National Action Plan (2007-2015) concerning the long term adapting of forest vegetation to the climate changes. There is a predicted increased occurrence of extreme weather events. Less resistant trees necessary for environment stability will decrease in number and it will raise the scope of natural disaster situations. It might lead to the necessity of modifying silvicultural practices.
- Appearance of protected species and associated ecosystems. The management of Bulgarian forests is a key factor for conservation of the biological and landscape diversity. Bulgarian forests are home to over 80% of the protected plants; over 60% of the animals threatened with extinction; over 60% of the priorities for protection habitats; eight of the twelve unique landscape complexes, determined in the National Strategy for Protection of the Biological Diversity as unique and representative for the Bulgarian biological diversity; the habitat of 43 world endangered species. About 10% of Bulgarian forests fall within the boundaries of different protected areas. Society considers this amount insufficient. The increased human activity in the forests in the last 100 years and the national economic development have led to various use of more and more forest areas, and forest products; fragmentation of forest ecosystems; homogenization of tree composition and the age of the forest stands; significant changes in the biological and landscape diversity as a result of forest fires (NFSP, 2006-2013). Teteven is known for the high diversity and richness of its fauna and flora. Protected species and associated ecosystems demand special approach in forest management practices.

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Ivan Petrov Paligorov, Ivaylo Hristov Ivanov, Elena Ilieva Dragozova-Ivanova, Stanislava Draganova Kovacheva-Veleva. Mežu ekosistēma un ieinteresēto pušu interešu konflikts

Lai gan izplatītākais uzskats par mežu izmantošanu saistās ar kokmateriālu ieguvi, tomēr mežiem ir arī citas funkcijas, piemēram, tie ir sēņu, ogu, ārstniecības augu, u.c. ieguves avots. Pētījuma mērķis ir izanalizēt informāciju par dažādu ieinteresēto pušu uzskatiem un nostāju attiecībā uz mežu ekosistēmas funkcionēšanu. Rakstā ir atspoguļoti aptauju rezultāti un analizēti strukturālie faktori, kas ietekmē ilgtspējīgu mežu pārvaldīšanu − mežsaimniecību. Iegūtie rezultāti ir nepieciešami mežu apsaimniekotājiem, lai tiktu ņemts vērā interešu konflikts, kas rodas mežu resursu izmantošanas gadījumā. Pētījums ir daļa no INTEGRAL projekta – *International Scientific Project for Future-Oriented Management of Forest* Landscapes. Izvēlētais pētījuma objekts (Tetevenas pašvaldība Bulgārijā) ir tipiska mežu ekosistēma, kur var tikt realizēta tās izmantošanas, aizsardzības un pārvaldīšanas funkciju pētniecība. Tetevenas pašvaldības mežu ekosistēmas nodrošinātie pakalpojumi ir kokmateriālu ražošana, kurināmā ražošana, biomasas iegūšana, bioloģiskās daudzveidības nodrošināšana, ūdens kvalitātes nodrošināšana, tūrisms, medības, atpūta u.c. Pētījumā iegūtie rezultāti rāda, ka Tetevanas reģiona mežsaimnieki lielāko labumu iegūst no kokmateriālu produkcijas, kurināmā vai biomasas ieguves enerģijas ražošanai. Pārējie mežu resursi tiek izmantoti daudz mazāk, apmēram 50% no ieņēmumiem rada meža produkti, kas nav saistīti ar kokmateriāliem (sēnes, ogas, ārstniecības augi utt.). Iespējamo konfliktu jomas ir saistītas ar vairākām sabiedrības grupām - dabas aizstāvjiem, uzņēmējiem, pārvaldniekiem un iedzīvotājiem. Balstoties uz veikto pētījumu, ir identificēti šādi svarīgi ekoloģiskie faktori, kas ietekmē mežu apsaimniekošanu un ieinteresēto pušu iespējamo interešu konfliktu: meža stāvoklis un struktūra, klimata izmaiņu ietekme uz mežsaimniecību, aizsargājamo augu un saistīto ekosistēmu esamība.

Иван Петров Палигоров, Ивайло Христов Иванов, Елена Илиева Драгозова-Иванова, Станислава Драганова Ковачева-Велева. Экосистема лесов и конфликт интересов заинтересованных сторон

Популярное представление об использовании лесов связано с рубкой лесоматериалов, но леса выполняют и другие функции. Леса богаты другими продуктами, например, грибами, ягодами, лекарственными растениями и т.д. Целью исследования является анализ информации о мнении разных заинтересованных сторон и их позиции в отношении функционирования экосистемы лесов. В статье отражены результаты опроса и проведен анализ структурных факторов, влияющих на устойчивое развитие управлением лесным хозяйством. Полученные результаты необходимы для хозяев лесов (собственников лесов), для учета конфликтах интересов при исползьовании ресурсов леса. Исследование является частью проектаI NTEGRAL-International Scientific Project for Future-Oriented Management of Forest Landscapes. Предмет исследования - поведение различных субъектов при использованииресурсов леса на примере Тетевена в Болгарии. Тетевен является типичным лесным хозяйством, где может быть реализовано исследование функций использования, охраны и управления. Лесная экосистема самоуправления Тетевен обеспечивает такими услугами, как производство лесоматериалов, производство топлива, добыча биомассы, обеспечение биологического многообразия, обеспечение качества воды, туризм, охота, отдых и добыча других продуктов, не являющимися лесоматериалом. Полученные результаты исследования показывают, что хозяйственники лесов региона Тетенева в большей степени приобретают от продукции лесоматериалов, топлива и добычи биомассы для производства энергии. Остальные лесные ресурсы используются в меньшей степени, примерно 50% дохода получены от лесных продуктов, не связанныхс лесоматериалами (грибы, ягоды, лекарственные растения и т.д.). Область возможных конфликтов связана со многими общественными группами – представители защиты природы, предприниматели, управленцы и граждане. Основываясь на проведённомисследовании, идентифицированы следующие важные экологические факторы, влияющие на лесное хозяйствование и возможный конфликт интересов заинтересованных сторон: структура и состояние лесов, влияние изменения климата на лесное хозяйствование, наличие охраняемых растений и связь экосистемы.