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IMPROVING OF FINANCING SYSTEM THROUGH DIVERSIFYING INCOME SOURCES OF NATIONAL PARK KOPAONIK

ABSTRACT

Financial incomes in the management of national parks represent one of the essential components in the management of protected areas. Revenues generated through the sustainable use of resources are of great importance, and are essential components financing the activities of national parks (NPs). In the system of financing NPs are determined by the three general methods of financing: the budget of the Republic of Serbia through grants; revenues generated by the organization that manages the NP and donations.

The aim of the research is to acquire new knowledge about the economic value of the part of ecosystem services in the territory of NP Kopaonik (NPK). The purpose of the research is part of the economic evaluation of ecosystem services, as well as establishing the importance and possibilities for the development of the NPK by further differentiating sources of income of the national park in comparison to other ecosystem services. The methodological approach refers to a case study in the territory of the NPK. The research objects are: timber (assortments and part of final production) and non-timber forest products (blueberries, porcini, chanterelles, wild berries and herbs), which are commercially important for management of NPK.

The assortment structure of timber which the NPK delivers to all customers, participate spruce and fir with 63%, while beech has a share of 37%. Placement of assortments of beech, spruce and fir has linear trend with exponential growth rate of +5.8%. Purchase of beech, fir and spruce decreases according to the linear trend with exponential growth rate of -4.4%, as well as placement on domestic market.

Keywords: financing, system, products, income, revenues, Kopaonik.

INTRODUCTION

Financing of NPs in Serbia is directly defined by the Law on Forests and Law on Nature Protection. NP Kopaonik has been established 1981 and occupy the area of 11.810 ha. It has natural resources of special values and includes well-preserved forests. Also have authentic elements of fauna and flora and include natural attractions which are readily accessible. In the system of financing NPK are determined by the three methods of financing as follows: direct funding through grants, revenues realized by the organization that manages the NP (self-

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financing), and funds provided from the implementation of programs, plans and projects in the field of nature protection. Of all analyzed income participating in the financing of the five NPs in Serbia in the period 2008-2013, mostly influenced are incomes from sales of goods and services and fee income. Share of revenues from sales of goods and services was 64.9% of all revenues (Đorđević et al., 2013, 2013a).

The literatures on financing for conservation point that lack of financial resources has continuously become a main challenge for supporting the conservation activities, particularly in protected areas (PAs) (Emerton et al. 2006, Child B., 2013). Sustainable financing is crucial to secure the conservation program's success (Verweij and de Man 2005). Accordingly, IUCN put five elements for the finance to be sustainable: it should be built in a scheme that minimizes the risks and uncertainties upon funding sources, improving financial administration and effectiveness by ensuring that funding is allocated in line with the needs and conservation goals, it should take a comprehensive view of cost and benefit in sustainable protected area management, with a fair contribution from those who get benefit, and adequate compensation for those who bear the cost, creating a framework of economic and financial mechanism in protected areas, the fifth element recommends creating tools and mechanism in the form of a business plan (GIZ FORCLIME, 2009).

The aim of the research is to acquire new knowledge about the economic value of the part of ecosystem services in the territory of NPK. The purpose of the research is part of the economic evaluation of ecosystem services, as well as establishing the importance and possibilities for the development of the NPK by further differentiating sources of income of the national park in comparison to other ecosystem services.

MATERIAL AND METHODS

In the research there have been used qualitative and quantitative methods of socio-economics sciences (Neuman, 2006). In order to establish a representative sample for this type of research, during the preparatory phase of the research were defined data on the liquidity of small and medium-sized enterprises (SMEs) that exist in the area of NPK (Rasina District) for the purchase, processing and marketing of NWFP and wood processing: the Business Registers Agency, internal documents of the Ministry of Agriculture and Environmental Protection and the National Bank of Serbia. In this way there have been determined the number of active enterprises within this forest are, which are relevant for the analysis of data related to Kopaonik. Three questionnaires were designed: for NP Kopaonik (20 questions), SMEs processing and marketing of NWFPs (45 questions) and wood processing SMEs (68 questions).

The study was included 3 groups of actors (Table 1):

1. NP Kopaonik (100.00% response rate),

2. seven (7) companies engaged in purchasing processing, and sale of NWFPs out of 16 that exist in this area (response rate 43.75%),
3. four (4) wood processing capacities from 7 registered (response rate 57.1%).

Table 1. Number of SMEs relevant for the analysis

NP Kopaonik	Place	The total number of companies	Number of active companies	Number of interviewed companies
NWFPs	Brus	7	7	4
	Raška	2	2	2
	Novi Pazar	2	1	1
Timber	Kopaonik	1		
Wood processing	Boljevac	4	3	1
	Raška	3	3	3

The research was carried out to determine the structure of revenues and trends in the structure of income NPK, looking at products that are relevant in terms of management of this area in the period 2005-2013. As a general scientific methods used the method of modeling and the method of trend analysis. In order to determine the structure of revenues in the financing of the national park were used statistical techniques based on time series analysis (Keča et al., 2015) and average annual exponential growth rate (I_s).

NP Kopaonik employs 57 workers, of which 5 are seasonal. According to the educational structure of a total of 33 workers with primary education, 2 with a high school degree, 1 with a college degree and 16 with high (6 of which forestry engineers). The market is mostly sold assortments spruce and fir, while to a lesser extent represented assortments of beech.

RESULTS AND DISCUSSION

The assortment structure of timber which the NPK delivers to all customers participate spruce and fir 63%, while beech has a share of 37%. Assortments of spruce and fir buys five sawmills where for the period from 2008 - 2013 realized total placement of 45.995 m³. Average annual placement of assortments spruce and fir from the NPK to the five most important customers is 7.665 m³. Assortments of beech bought three sawmills, where in the period of 2008 - 2013 realized total purchase of 31.759 m³. Average annual placement of assortments of beech NPK according to the three most important customers is 981 m³.

The analysis of placement (Figure 1) of assortments of beech, spruce and fir from NPK shows that it is linear trend, with medium correlation (0.689) and the correlation coefficient is statistically significant, as indicated by an error of about 4% (Significance F). Parameters are significant (for error level of $\alpha =$

0.05%) because the corresponding P-value indicates an error of about 4% and exponential annual growth rate is 5.8% (Table 2).

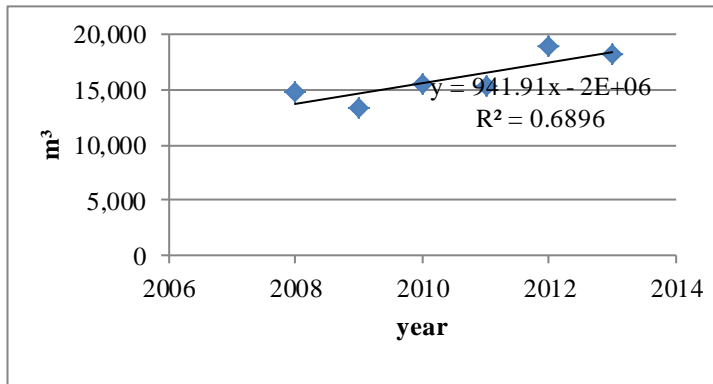


Figure 1. Placement of assortments of beech, spruce and fir from NPK

Table 2. Basic elements regression trend analysis placement assortments beech, spruce and fir for 2008-2013.

Parameters		t	R	F	Y = 941,91x - 2E+06	
a	-1877689	-2,95575	0,830416	8,886247	Annual exponential growth rate (%)	
b	941,9143	2,980981				

Average processing capacity is 7.750 m³/year for interviewed SMEs in wood processing. Average capacity utilization is app. 45%. All the SMEs are privately owned.

Purchase of beech, spruce and fir (Figure 2) decreases according to the linear trend. There is a strong correlation (0.913) and the correlation coefficient is statistically significant, as indicated by an error of about 0.4% (Significance F). The parameters are significant (for error level of $\alpha = 0.05\%$) because the corresponding P-value indicates an error of about 0.3%. The rate of decline is -4.4% (Table 3).

Table 3. Basic elements regression trend analysis buying assortments beech, spruce and fir for 2008-2013 in SMEs.

Parameters		t	R	F	Y = -392,79x + 798307	
a	798307,4	5,070946	0,913326	25,1502	Annual exponential growth rate (%)	
b	-392,786	-5,015				

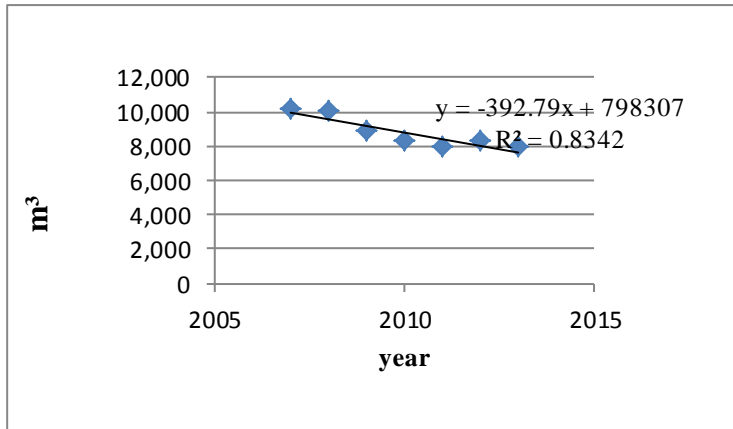


Figure 2. Buying of assortments of beech, spruce and fir of SMEs

The average annual volume of purchase of raw beech timber is 485 m³. The most common dynamics of the purchase is in the period May - June and September - December. The average annual amount of raw materials purchase of spruce and fir is 2.848 m³. Prices at which the SMEs purchase assortments of beech is in the range 40.35 – 125 €/m³, while the price of assortments of spruce and fir is app. 48.85-121 €/m³. The most common forms of payments are: in advance, compensation and with deferred payment.

Placement on the domestic market total (beech, spruce and fir) is held according to the linear trend (Figure 3). There is a strong correlation (0.925) and the correlation coefficient is statistically significant, as indicated by an error of about 0.2% (Significance F), and the parameters are significant (for error level of $\alpha = 0.05\%$), because the corresponding P -value indicates an error of about 0.2%. The rate of decline is - 4.1% (Table 4).

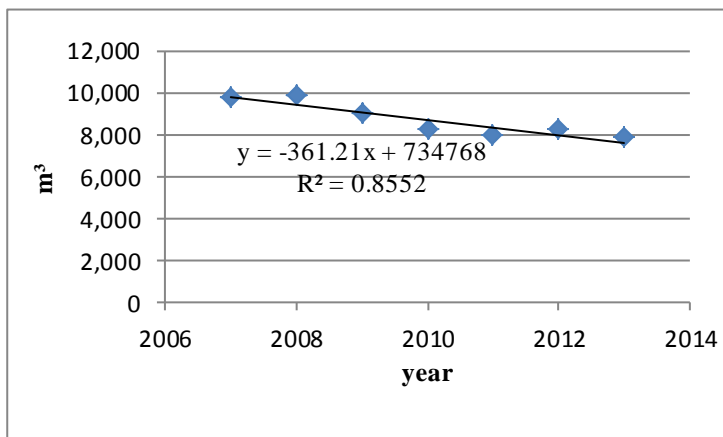


Figure 3. Placement of assortments of beech, spruce and fir on domestic market.

Table 4. Basic elements regression trend analysis of placement of assortments beech, spruce and fir on domestic market.

Parameter		<i>t</i>	<i>R</i>	<i>F</i>	Y= -361,21x + 734768	
<i>a</i>	734768,3	5,499273	0,924765	29,52788	Annual exponential growth rate (%)	- 4,1
<i>b</i>	-361,214	-5,43396				

Export of final products made from beech, spruce and fir is held to model linear trend in Austria, Italy and Croatia (Figure 4). There is a strong correlation (0.881) and the correlation coefficient is statistically significant, as indicated by an error of about 0.8% (Significance F), the parameters are significant (for error level of $\alpha = 0.05\%$) because the corresponding P-value indicates an error of about 0.8%. Annual exponential growth rate is -4.3% (Table 5).

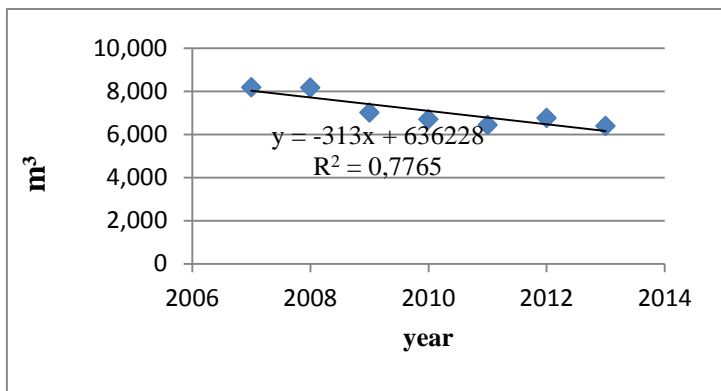


Figure 4. Export of final products made of beech, spruce and fir.

Table 5. Basic elements regression trend analysis of export of final products of beech, spruce and fir.

Parameter		<i>t</i>	<i>R</i>	<i>F</i>	Y= -313x + 636228	
<i>a</i>	636227,7	4,214986	0,881196	17,37194	Annual exponential growth rate (%)	- 4,3
<i>b</i>	-313	-4,16797				

The analyzed SMEs in NWFPs business mainly are situated in the rural areas of Kopaonik and all of them are established in previous 6-16 years, employing to ten employees.

Purchase of NWFPs is held according to polynomial model of second degree. There is a strong correlation (0.835) and the correlation coefficient is statistically significant, as indicated by an error of about 2% (Significance F), the parameters are significant (for error level of $\alpha = 0.05\%$) because the corresponding P-value indicates an error of about 1%, a growth rate is 3.6%.

Average amount of NWFPs that are purchased for the period of 2004-2013 of the surveyed SMEs were 343 t. Average annual quantities that are purchased annually are: for 23 t boletus, chanterelles 12 t, 38 t blueberry, rosehips 30 t. Purchase price porcini are on average € 4.5, while their selling price approximately 6 €, chanterelle is purchased by an average of 9 € and the sales price varies and ranges from 12 €. The purchase price of blueberries is app. 1.2 € and selling about 1.5 €

Placement of NWFPs on the domestic market is held according to polynomial model of second degree, where is a medium correlation (0.675) and the correlation coefficient is not statistically significant, as indicated by an error of about 12% (Significance F), the parameters are not significant (for error level of $\alpha = 0.05\%$), as the corresponding P-value indicates an error of approximately 11%. The growth rate of the observed phenomenon is relatively high and amounts to 20.06%.

Export of NWFPs is held according to a linear trend, where there is a medium correlation (0.682) and the correlation coefficient is statistically significant, as indicated by an error of about 3% (Significance F), and the parameters are significant (for error level of $\alpha = 0,05\%$) as the corresponding P-value indicates an error of approximately 3%. The growth rate of observed phenomena is 3.7% (Table 6).

Table 6. Elements of regression analysis of trend of buying, placement and export of NWFPs.

Buying of NWFPs						
Parameter		t	R	F	$Y = -5,8561x^2 + 23535x - 2E+07$	
a	-2,4E+07	-3,2462	0,835507	8,092169	Annual exponential growth rate (%)	
b	23534,67	3,244754			+3,6	
c	-5,85606	-3,24326				
Placement of NWFPs on domestic market						
Parameter		t	R	F	$Y = -3,7008x^2 + 14874x - 1E+07$	
a	-1,5E+07	-1,84673	0,675208	2,932718	Annual exponential growth rate (%)	
b	14873,91	1,845747			+20,06	
c	-3,70076	-1,84476				
Export of NWFPs						
Parameter		t	R	F	$Y = 11,139x - 22074$	
a	-22073,7	-2,60641	0,682587	6,979151	Annual exponential growth rate (%)	
b	11,13939	2,641808			+3,7	

The average annual amount of exported NWFP for the period from 2004 to 2013 is 300 t. Viewed by most important export products for the same period, the average annual export of porcini mushrooms was approximately 54 t, 23 t

chanterelles, blueberries 117 t and 32 t of wild rose. The most important export markets for: porcini is Italy, chanterelles are: Italy, Germany, France and Austria, for blueberries are: Italy, Germany, France and Austria and for rosehip: Germany, Bosnia and Herzegovina.

The analysis shows that some basic values that NP Kopaonik has to force in it's portfolio in the future: quality and proximity to raw materials, standardized products and price competitiveness. On the other hand weaknesses which represent limiting factors are illiquid market, the lack of promotional activities and capacity utilization.

Source of fund which can significantly contribute to NPs management is private and community funds, which appear to have increased in recent years in the world (Emerton et al., 2006) and also tourism industry (Boza, 1993). IUCN (Emerton et al., 2006) noted some important opportunities to diversify the funding sources are: benefit cost analysis; changes in fiscal system, for instance by providing incentives and removing disincentives; to allow a timely basis use of funds through a revenue-benefit sharing mechanism; to mobilize stakeholders, participation to share management cost and responsibilities; to involve commercial enterprises in the sustainable use of protected areas; and imposing payment for environmental services (Widyaningrum, 2012). All these opportunities can be applied in Serbia, because their model of financing is widely accepted in developing countries all around the world (Dharmaratne, 2000). Financial sustainability in NP Kopaonik is expected to be achieved with maximizing all the economic potentials, taking into account the natural characteristics of this area in the future.

New paradigm of NPs all around the world emphasizes multi-functional orientation and bears in equal measure enormous challenges and substantial conflict-potential (Mose and Weixlbaumer, 2007). NP Kopaonik should develop business plan that accommodates the interest of businesses including investors and public (Putro et al., 2012), so that a good business plan could be used as the communication tool between parks manager and the stakeholders in the future.

CONCLUSIONS

The results indicate that placement of assortments of beech, spruce and fir from NP Kopaonik has linear trend, with medium correlation (0.689) and I_s of 5.8%. Average capacity utilization in wood processing companies is 45% and purchase of beech, spruce and fir decreases according to the linear trend, where the correlation (0.913) is strong and I_s is -4.4%. Placement on the domestic market total (beech, spruce and fir) is held according to the linear trend with strong correlation (0.925) and the rate of decline is - 4.1%. Export of final products is held to model of linear trend with strong correlation (0.881) and annual exponential growth rate is -4.3%. Purchase and placement of NWFPs is held according to polynomial model of second degree, with the correlation in a range (0.83-0.67), and export is linear function. Annual exponential growth rate

is positive in a range +3.6% for buying to +20.06% placements on domestic market.

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