

ISSN 1821-1046

UDK 630

INSTITUTE OF FORESTRY  
BELGRADE



INSTITUT ZA ŠUMARSTVO  
BEOGRAD

**SUSTAINABLE FORESTRY    ODRŽIVO ŠUMARSTVO**

COLLECTION  
TOM 67-68

ZBORNİK RADOVA  
TOM 67-68



**BELGRADE    BEOGRAD**  
**2013.**

ISSN 1821-1046



9 771821 104000

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**INSTITUTE OF FORESTRY BELGRADE** **INSTITUT ZA ŠUMARSTVO BEOGRAD**  
**PROCEEDINGS** **ZBORNİK RADOVA**

**Publisher**

Institute of Forestry  
Belgrade, Serbia

**Izdavač**

Institut za šumarstvo  
Beograd, Srbija

**For Publisher**

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**Printed in**

100 copies

**Tiraž**

100 primeraka

**Printed by**

Black and White  
Beograd

**Štampa**

Black and White  
Beograd

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Belgrade, 2013

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Beograd, 2013

**Cover Page:** Author of the Photos Tatjana Ćirković-Mitrović, M.Sc.  
**Naslovna strana:** Autor fotografije mr Tatjana Ćirković-Mitrović

CIP - Каталогизација у публикацији  
Народна библиотека Србије, Београд

630

SUSTAINABLE Forestry : collection =  
Održivo šumarstvo = zbornik radova /  
chief

editor = glavni i odgovorni urednik  
Snežana

Rajković. - 2008, T. 57/58- . - Belgrade  
(Kneza Višeslava 3) : Institute of forestry,  
2008- (Beograd : Black and White). - 24  
cm

Godišnje. - Je nastavak: Zbornik radova -  
Institut za šumarstvo = ISSN 0354-1894  
ISSN 1821-1046 = Sustainable Forestry  
COBISS.SR-ID 157148172

# CONTENT SADRŽAJ

## TOM 67-68

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Ljiljana BRAŠANAC-BOSANAC, Tatjana ĆIRKOVIĆ-MITROVIĆ <b>AIR TEMPERATURE CHANGES IN SERBIA IN PERIOD 1949-2010 IN VIEW OF GLOBAL CLIMATE CHANGES</b>	7
Milorad VESELINOVIĆ, Suzana MITROVIĆ, Dragana DRAŽIĆ, Dragica STANKOVIĆ, Snežana RAJKOVIĆ, Biljana NIKOLIĆ, Nevena ČULE <b>CERTAIN HISTOLOGICAL CHARACTERISTICS OF DOUGLAS- FIR NEEDLES IN DIFFERENT HABITATS</b>	15
Vera LAVADINOVIĆ, Vladan POPOVIĆ, Emil POPOV, Vukan LAVADINOVIĆ <b>TESTING OF CANADIAN DOUGLAS-FIR HEIGHT IN JUVENILE PHASE</b>	23
Renata GAGIĆ SERDAR, Radovan NEVENIĆ, Goran ČEŠLJAR, Svetlana BILIBAJKIĆ, Tomislav STEFANOVIĆ, Zoran PODUŠKA, Ilija ĐORĐEVIĆ <b>THE MOST COMMON FOREST PHYTOCOENOSIS ENDANGERED BY FALSE INDIGO SPREADING IN SERBIA</b>	33
Miloš KOPRIVICA, Bratislav MATOVIĆ, Vlado ČOKEŠA, Snežana STAJIĆ <b>STAND VOLUME TABLES FOR BEECH IN SERBIA</b>	45
Snežana STAJIĆ, Vlado ČOKEŠA, Zoran MILETIĆ <b>STAND CONDITION AND SILVICULTURAL NEEDS IN ARTIFICIALLY ESTABLISHED EASTERN WHITE PINE STAND (<i>Pinus strobus</i> L.) IN THE BOGOVAĐA REGION</b>	59
Goran ČEŠLJAR, Radovan NEVENIĆ, Svetlana BILIBAJKIĆ, Tomislav STEFANOVIĆ, Renata GAGIĆ SERDAR, Ilija ĐORĐEVIĆ, Zoran PODUŠKA <b>VIABILITY OF TREES ON BIO-INDICATOR PLOTS LEVEL -A 1 IN REPUBLIC OF SERBIA IN 2013</b>	69
Radovan NEVENIĆ, Svetlana BILIBAJKIĆ, Miroslava MARKOVIĆ, Goran ČEŠLJAR, Tomislav STEFANOVIĆ, Ilija ĐORĐEVIĆ, Zoran PODUŠKA <b>TREE CROWN CONDITION AT LEVEL II SAMPLE PLOTS KOPAONIK, CRNI VRH AND MOKRA GORA IN 2013</b>	79
Tomislav STEFANOVIĆ, Svetlana BILIBAJKIĆ, Radovan NEVENIĆ, Ilija ĐORĐEVIĆ, Zoran PODUŠKA, Goran ČEŠLJAR, Renata GAGIĆ SERDAR <b>RESULTS OF RESEARCH OF DEFOLIATION ON BIO-INDICATOR PLOTS IN REPUBLIC OF SERBIA IN 2013</b>	95

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Nevena ČULE, Dragana DRAŽIĆ, Milorad VESELINOVIĆ, Ljiljana BRAŠANAC-BOSANAC, Suzana MITROVIĆ, Marija NEŠIĆ <b>BIOLOGICAL RECLAMATION OF LANDSCAPE DEGRADED BY SURFACE MINE EXPLOITATION - CASE STUDY OF COAL SURFACE MINE „TAMNAVA – ZAPADNO POLJE“</b>	103
Mihailo RATKNIC, Tatjana RATKNIC, Zoran MILETIC, Vlado COKESA, Snezana STAJIC, Sonja BRAUNOVIC, Tatjana CIRKOVIC-MITROVIC <b>CHANGES OF FOREST HABITATS DESTROYED BY FIRE AND THE RATE OF NATURAL REVITALISATION OF DAMAGED ECOSYSTEMS</b>	117
Svetlana BILIBAJKIĆ, Tomislav STEFANOVIĆ, Radovan NEVENIĆ, Goran ČEŠLJAR, Renata GAGIĆ SERDAR, Zoran PODUŠKA, Ilija ĐORĐEVIĆ <b>ANALYSIS OF SILTATION SLOPE DEPENDENCE ON GRAIN SIZE COMPOSITION OF SEDIMENT IN TORRENT STREAMS OF TRGOVISKI TIMOK DRAINAGE BASIN</b>	133
Mara TABAKOVIĆ-TOŠIĆ <b>GYPSY MOTH (<i>Lymantria dispar</i> L.) OUTBREAK IN THE CENTRAL PART OF REPUBLIC OF SERBIA IN THE PERIOD 2010-2013</b>	141
Miroslava MARKOVIC, Snezana RAJKOVIC, Radovan NEVENIC, Aleksandar LUCIC <b>IMPACT OF THE EDIBLE MUSHROOM ON DESTRUCTION OF OAK WOOD</b>	151
Ilija ĐORĐEVIĆ, Zoran PODUŠKA, Radovan NEVENIĆ, Renata G. SERDAR, Svetlana BILIBAJKIĆ, Goran ČEŠLJAR, Tomislav STEFANOVIĆ <b>ASSESSMENT OF THE SYSTEM OF FUNDING OF PROTECTED AREAS IN THE REPUBLIC OF SERBIA</b>	161
Zoran PODUŠKA, Ilija ĐORĐEVIĆ, Radovan NEVENIĆ, Svetlana BILIBAJKIĆ, Renata GAGIĆ SERDAR, Goran ČEŠLJAR, Tomislav STEFANOVIĆ <b>POSSIBILITIES FOR IMPROVEMENT OF THE MANAGEMENT OF PROTECTED NATURAL AREAS</b>	175
Katarina MLADENOVIĆ, Bojan STOJNIĆ, Slobodan MILANOVIĆ, Vlado ČOKEŠA, Ivan MILENKOVIĆ <b>SPECIES COMPOSITION OF SPIDER MITES AND PREDATORY MITES (<i>Acari: Tetranychidae, Phytoseiidae</i>) OCCURRING ON CRAB APPLE (<i>Malus silvestris</i> Mill) IN SERBIA</b>	187

UDK 630\*676+630\*941(497.11-751.2/.3)=111  
Original scientific paper

## ASSESSMENT OF THE SYSTEM OF FUNDING OF PROTECTED AREAS IN THE REPUBLIC OF SERBIA

*Ilija ĐORĐEVIĆ, Zoran PODUŠKA, Radovan NEVENIĆ, Renata G. SERDAR,  
Svetlana BILIBAJKIĆ, Goran ČEŠLJAR, Tomislav STEFANOVIĆ<sup>1</sup>*

**Abstract:** *The system of funding of protected areas in Serbia represents a complex structure, composed of different actors, regulations and competences. Protected areas cover ~ 5.89% of the territory of the Republic of Serbia and funding of protected areas represents a key component of their functioning, since all activities in protected areas depend upon it. Funding was analysed through application of survey technique, aimed at obtaining an estimate of the impact of specific funding methods. The method of funding of protected areas were classified into six categories and analysed by the survey. The elements of protected area funding with the strongest impact are the primary activity (wood production) and subsidies obtained from the republic and local authorities. Although in many protected areas revenue generated from tourism represents an important funding component, its contribution is not very significant in Serbia. If this form of revenue is diversified in the following period, by means of improvement of infrastructure and protected area offerings, higher revenues from this activity may be expected.*

**Key words:** protected areas, funding mechanisms, importance of primary activity and subsidies

## ПРОЦЕНА СИСТЕМА ФИНАНСИРАЊА ЗАШТИЋЕНИХ ПОДРУЧЈА У РЕПУБЛИЦИ СРБИЈИ

**Извод:** *Систем финансирање заштићених подручја у Србији представља комплексну структуру различитих актера, правила и надлежности. Заштићена подручја покривају површину од ~5,89 % територије Републике Србије и стога финансирање ЗП представља кључну компоненту, јер од њега зависе активности које се спроводе у ЗП. Финансирање је истраживано кроз примену технике анкете у*

<sup>1</sup> Institute of Forestry, Belgrade, Serbia

*циљу добијања процене утицаја појединих начина финансирања. Начини финансирања ЗП су груписани у шест категорија које су кроз анкете анализирани. Елементи финансирања ЗП који имају највише утицаја је примарна делатност (производња дрвета) и дотације од стране републичких и локалних органа. Иако приходи од туризма у многим ЗП представљају битну компоненту финансирања, код нас они немају велики утицај. Уколико се у наредном периоду овај вид прихода диверзификује, кроз унапређење инфраструктуре и понуде ЗП, могу се очекивати већи приходи од ове делатности.*

**Кључне речи:** заштићена подручја, механизми финансирања, значај примарне делатности и дотација

## 1. INTRODUCTION

Serbia, as a prospective EU member state, has already initiated certain processes related to introduction of legislative reforms and adoption of norms and regulations on management of protected areas. Hence, the system of protected areas (PAs) in Serbia represents a complex structure, composed of different actors, rules, competences and institutions involved in functioning of PAs. The Law on Nature Protection (2009) was one of the basic pillars of nature protection in Serbia. This law defines various forms of management in protected areas, as well as the types of protected areas. In addition, the Law on Nature Protection stipulates basic principles of protection, both from the aspect of nature protection on the one hand, and financing, improvement, control measures and implementation of its principles on the other hand. After a long period of usage of the term 'natural protected area', which encompassed several different terms and implied protection of species and heritage, this term was divided into three: protected areas, protected species and mobile protected natural documents. The protected areas are defined as areas with a distinct geological, biological, eco-system and/or landscape diversity and as such they are designated as 'protected areas of general interest', by a nature protection act. On the other hand, the International Union for Conservation of Nature (IUCN) defines protected areas as a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means<sup>1</sup>, to achieve the long-term conservation of nature with associated 'ecosystem services' and cultural values (Emerton, L. et al. 2006).

Natural resources, along with protected areas, represent a 'treasure of mankind and attributes of economic, social, political and cultural systems of any country' (Nevenić, et al. 2009). Protection of natural property and, hence, protection of certain areas has a long history, both in the Republic of Serbia and Europe, the USA and other countries worldwide. The concept of nature protection was originally developed as a result of the need aristocracy had for privacy and their own hunting space in isolated areas. Many European forests in the last one thousand years enjoyed precisely that type of protection and were used as hunting

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<sup>1</sup> This entails recognising protected areas by means of certain laws, international conventions or agreements. PA management, by application of legislative and other measures, must be effective but in conformity with legislation and traditional methods of use.

areas (Martinić, 2010). One of the oldest protected areas on the territory of the Republic of Serbia is 'Obedska Bara', protected in 1874, which is presently under one of the strictest forms of protection. Protection of Biogradska Gora in Montenegro dates back to 1878 and it is one of the oldest nature reserves in the world (Curovic et al 2011).

In the 20<sup>th</sup> century, the expansion of protected areas became more evident. One of the first laws on nature protection in the Republic of Serbia, designating Fruška Gora as a national park (NP), dates from 1960, while the boundaries of this National Park were precisely defined by the Law of 1977 (Đorđević, 2009). There are seven categories of protected areas and several management categories distinguished within the framework of the PA management system in Serbia (Đorđević, 2009). PA funding is directly defined by the Law on Nature Protection and the Law on Forests, while indirectly through a series of sub-legal documents and bylaws. The following three models of funding are defined in the system of PA funding (Đorđević, et al. 2013):

- a) budget of the Republic of Serbia – subsidies;
- b) revenues generated by an organisation managing a national park (NP);
- c) donations

Direct funding through subsidies can be performed through the budget of the Republic of Serbia, funds of the autonomous provinces (AP) and funds of local self-government units. Revenues generated by an organisation managing an NP can include fees for the use of PA, revenues generated from performing economic activities and managing an NP and the funds obtained through realisation of programmes, plans and projects in the field of nature protection (Đorđević, 2009). The final category includes donations, gifts and aids, of the domestic and international character. On the other hand, from the aspect of the method of generating and use of revenue, NP funding can be classified into three categories (Sprugeon, et al. 2009).

The subject of the study of this paper is the structure of PA funding and its importance for PA management. The purpose of the study is to determine, by means of comparison, the importance of various categories of funding, both in terms of financing, and in terms of a PA size. The key objective is to determine the importance of certain elements of funding and the differences in relation to a PA size.

## **2. MATERIAL AND WORK METHOD**

Contingent upon the study needs and objective, different general and specific scientific methods were employed. General methods, by their nature, can be employed for acquiring knowledge in all sciences and scientific disciplines. The general scientific method employed in this study is the statistical method, while the other general scientific methods include the hypothetical, deductive, analytical-deductive and comparative method (Šešić, 1984, Miljević, 2007). The specific scientific methods employed in the study are the method of analysis and synthesis, and the method of generalisation and specialisation, (Šešić, 1984). The methods and techniques of data processing represent procedures for gathering study data, as well as the instruments used in work. The method employed for gathering data is

an investigation, a technique frequently used in socio-economic studies. The investigation represents such method where gathering data is performed by means of indirect investigation. It is a method in which required information is obtained in the course of verbal communication with an examinee. An investigation can be divided into four categories according to a procedure, position, number and manner of investigation. The investigation procedure used in this study is neutral, while the position is direct, that is, an examinee was informed in advance about the investigation. The investigation was performed individually, while the investigation method, or technique, was a survey. A survey is conducted based on a sample, while an investigation is performed based on previously defined questions and forms. In addition to the questions of a closed type, the investigation also involved open type questions, where an examinee was able to provide an answer in written form. This survey was the basis for gathering data from the staff in protected areas (Nevenić, et al. 2008). The survey included six topics, covering the concept of good management, while this paper covers only one topic, related to PA funding. The total number of analysed surveys is 49.

The method employed for data processing is the SPSS programme, in which examinees' answers are entered and later processed by means of statistical methods. For the purpose of determining the impact of different sources of funding on PA management, frequency analyses, which involved a PA size, a PA source of funding and shortcomings of PA funding system, were applied. In order to analyse the impact of a PA size on funding, all PAs were divided into three categories according to surface area. By means of use of the visual binning<sup>1</sup> technique, PAs were divided into three categories in order to identify differences in the method of management between larger and smaller PAs (below 456ha, between 456 and 7,543ha and over 7,543ha). These PA categories based on surface area were later used for comparison with the sources of funding, for the purpose of determining a statistically significant impact. Given the fact that the analysis indicated that data were not regularly distributed, the non-parametric 'Mann-Whitney-U' test was used, which pointed out to a statistical significance between the two studied variables.

### **3. RESULTS AND DISCUSSION**

The PA funding system in Serbia represents a set of different mechanisms, both on republic, provincial and local level, as well as on the level of the management itself. On the republic level, there are two competent ministries and several agencies providing financial support through subsidies for projects in various fields. Such form of budget funding represents the first model of funding in the system of PA management in Serbia. It represents a very important component of the management of PAs, recognised both in Serbia (Đorđević, 2009) and at the international level (Ornat et al., 2006). According to the method of allocation of funds, budget funding can be divided into direct and indirect. Direct budget funding includes PA fund allocations at the level of local self-governments, autonomous provinces and the republic level. Following the adoption of the budget

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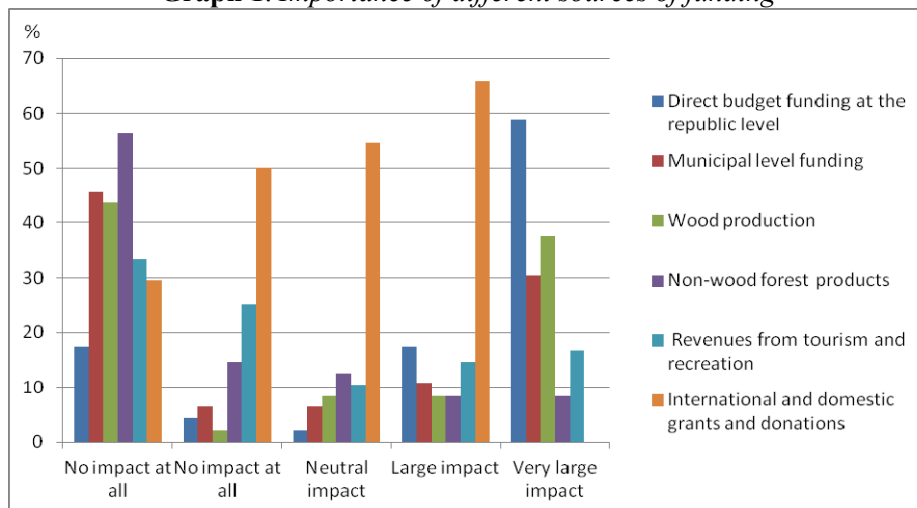
<sup>1</sup> This technique, in the SPSS programme, enables PA grouping according to a number of samples

at the Republic level, certain funds are transferred to local self-governments and autonomous provinces. At the level of the Autonomous Province of Vojvodina, there are two Provincial Secretariats (PS), PS for urban planning, construction and environmental protection and PS for agriculture, water management and forestry, responsible for PA management and thus representing another source of PA funding. The last form of direct funding having impact on PA management refers to funding provided by local self-governments. Indirect budget funding is performed through fees and charges collected by local self-governments on their territories; as such, those fees are not part of the Republic funding. At the level of large towns in Serbia (Belgrade, Novi Sad, Kragujevac, Niš, Obrenovac), there are Environmental Protection Secretariats, which directly finance certain activities in PAs. In addition, large industrial towns establish their own Environmental Protection Funds, which represent another funding mechanism. Another group of PA funding concerns financing performed by PA managements (Đorđević, 2009). This type of funding belongs to a group of mechanisms relying on revenues that an organisation managing a PA generates on a PA territory. These financing mechanisms are market oriented and represent an important source of PA funding (IUCN, 2003). According to the method of generating these revenues, they are divided into: a) tourism revenues b) revenues from use of PA resources and c) payments for eco-system services. Revenues generated from tourism and recreation may have a considerable importance for PAs. During a year, a large number of tourists visit PAs and some of them may represent a source of considerable revenue through entrance fees and recreational activity fees. Tourism-generated revenues include PA entrance fees and fees imposed for use of recreational services, fees collected from hotel and tourism organisations (parking, camping, bike renting, bird watching, etc) (Koteen, 2004, Đorđević, 2009). PA funding is also performed through use of a PA resource itself. A PA resource includes everything that is located within a PA territory and everything within the borders a PA territory. More precisely, a resource encompasses not only wood and non-wood products, but also the entire territory within PA boundaries. These funding elements were further analysed through surveys conducted directly in the field or by mail. In order to assess the impact of these funding elements, six groups of funding mechanisms were identified:

1. direct budget funding from the competent ministries and state funds;
2. municipality level funding;
3. wood production;
4. collection and sale of non-wood forest products;
5. revenues generated from tourism and recreational activities;
6. international donations.

The impact of the above-mentioned funding elements on all PAs, providing answers to survey questions, were presented in the graph below.

**Graph 1. Importance of different sources of funding**



Source: SPSS<sup>1</sup>

As can be seen from the above, direct budget funding has a considerable impact on PA management, since more than 58.7% of examinees marked this form of funding. When the answers marking both ‘large impact’ and ‘budget funding’ are singled out, the obtained results indicate that this form of funding is certainly an important component of PA management. The local level funding is not that important (45.7%), nor is the funding obtained from non-wood forest products (56.3%). A financial source, such as direct allocations at the republic level, recorded a positive exponential trend (1.4%) in the funding of all NPs in Serbia. If exponential trends of different forms of revenue in all NPs in Serbia for the period 2008-2012 are compared, NP Tara (NPT) recorded the highest values (14%), whereas NP Fruška Gora (NPF) recorded the lowest values (-21.8%) (Đorđević et al., 2013). Subsidy allocations in comparison to gross domestic product (GDP) in Serbia in 2008 accounted for 0.0025%, whereas the Republic of Croatia allocations to NPs in the same period accounted for 0.0052% of the GDP (2008 and Spurgeon, 2009). In addition, a negative *I*s (-2.6 %) is also present. In 2004, Croatia allocated 0.028% of its GDP to all protected areas (Mansourian et al., 2008), while there are no similar data for Serbia for a long-term period. Funding generated from wood production elicited conflicting opinions among examinees. On the one hand, 43.8% examinees stated that this form of funding is not relevant at all, while 37.5% considered it very important. This may be a result of the fact that certain PAs, (such as NPs and nature parks), depend upon the primary activity, whereas other PAs are more oriented towards tourism and state subsidies. The study conducted in five national parks in the period 2008-2012 (Đerdap, Kopaonik, Tara, Fruška Gora, Šar Planina) indicated that revenues generated from sale of goods and services accounted for 64.9% of the total revenue and those revenues showed a positive exponential trend (6.4%) (Đorđević et al., 2013). Tourism, as a form of revenue,

<sup>1</sup> Data are processed in the SPSS programme during the work on the PAGO V Project and the Forest Management Project

has no significance at all for 33% of examinees; only 16.7% of examinees find it very important, while the international subsidies are very important for 65.9% of examinees. Specific studies for these two forms of funding have not been conducted in Serbia. There is a study carried out in Croatia, indicating that the revenues generated from tourism account for 6-80% of the total revenues (Spurgeon, 2009).

Recreation as a form of tourism in protected areas represents an additional value (Cvejić, 2008) that ought to be further developed in order to improve and enrich the content of PAs. The examples of adaptation of forest and forest land to recreational tourism are numerous, and they include eco and ethno tourism, educational and tourist paths, bird-watching, cycling paths, adventure parks, etc. (Poduška et al., 2011). Additionally, recreation in PAs, as a form of tourism, can supplement budgets of local and republic governments. The studies conducted in developed countries indicate that revenues generated from this activity experience a constant increase (Nevenić, 2006).

This segment of the study also included questions of open type related to PA funding. Within this segment, examinees specified exactly where funds were lacking and for what purposes. All questions were entered into the SPSS programme, and then, by means of qualitative technique, such is transcription, the answers were classified into six categories. The abovementioned categories are the following:

1. direct budget funding from the competent ministries and state funds;
2. funding at the municipal level;
3. wood production;
4. collection and sale of non-wood forest products;
5. revenues from tourism and recreation;
6. international donations.

As mentioned previously, a comparative analysis involving a PA size and importance of financial categories was conducted for the purpose of determining differences in funding methods. Hence, three categories of protected areas, classified according to surface area (below 456ha, between 456 and 7,543ha and over 7,543ha), were analysed. By application of the non-parametric Mann-Whitney-U test, statistical significance of the following values (surface area and funding categories) was determined.

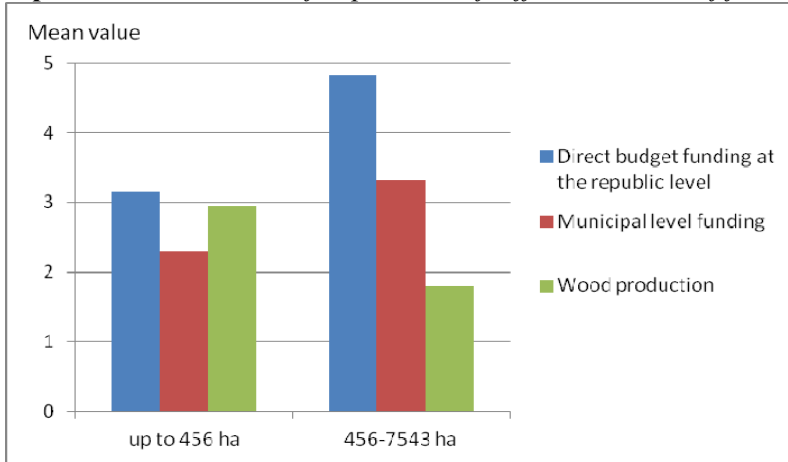
**Table 1.** *Impact with respect to funding method and PA surface area (below 456ha and 456 - 7,543ha)*

	Direct budget funding at the republic level	Municipal level funding	Wood production	Non-wood forest products	Revenues from tourism and recreation	International donations
Mann-Whitney U	65.500	90.000	82.500	110.000	101.000	85.000
Wilcoxon W	255.500	300.000	187.500	215.000	311.000	256.000
Z	-3.014	-2.143	-2.233	-1.266	-1.692	-1.921
Asymp. Sig. (2-tailed)	.003	.032	.026	.205	.091	.055

Source: SPSS

In the protected areas below 456ha and between 456 and 7,543ha, at  $p < 0.05$ , the differences between direct allocations at the national, local level and wood production are statistically significant (Table 1). The impact of analysed values was determined by application of frequency analyses. These differences are presented in the graph below:

**Graph 2.** *The mean value of importance of different sources of funding*



Source: SPSS

Direct allocations at the republic level have a very strong impact on the PAs of surface area between 456 and 7,543ha, whereas that impact is of neutral character in the PAs below 456ha. A similar case is with allocations at the local level, where the impact on the PAs below 456ha is very low, while that impact is of neutral character in the PAs of the second category. The impact of wood production on PA management in the analysed categories slightly differs. In the PAs below 456ha, the impact of wood production is of neutral character, while in the PAs between 456 and 7,543ha, it is of very little importance.

**Table 2.** *Impact with respect to funding method and PA surface area (below 456ha and over 7,543ha)*

	Direct budget funding at the republic level	Municipal level funding	Wood production	Non-wood forest products	Revenues from tourism and recreation	International donations
Mann-Whitney U	78.500	99.000	85.000	125.000	117.500	89.500
Wilcoxon W	268.500	309.000	295.000	335.000	327.500	260.500
Z	-1.535	-.491	-2.089	-.558	-.487	-.443
Asymp. Sig. (2-tailed)	.125	.623	.037	.577	.626	.658

By comparison of funding importance and the two PA categories (Table 2), statistically significant differences with respect to importance of wood production (at  $p < 0.05$ ) were determined. In the PAs below 456ha, this category of funding is

of neutral character, whereas in the PAs over 7,543ha, it is of considerable importance. Although the difference is low, it could be concluded that it is statistically significant for funding of the PAs over 7,543ha, and that the primary activity is one of the main sources of basic revenue, used for financing of all other PA activities.

**Table 3.** *Impact with respect to funding method and PA surface area (456-7,543ha and over 7,543ha)*

	Direct budget funding at the republic level	Municipal level funding	Wood production	Non-wood forest products	Revenues from tourism and recreation	International donations
Mann-Whitney U	64.000	61.500	26.000	54.000	79.500	47.500
Wilcoxon W	142.000	127.500	131.000	159.000	170.500	113.500
Z	-1.650	-1.186	-3.610	-2.219	-.862	-1.892
Asymp. Sig. (2-tailed)	.099	.236	.000	.026	.389	.058

The final category of the analysed PAs refers to the PAs of the surface area between 456 and 7,543ha and over 7,543ha. By application of the aforementioned test, statistical significance ( $p < 0,05$ ) was determined for two financing methods (wood production and non-wood forest products). Application of frequency analysis on use of non-wood forest products determined no substantial differences in terms of importance, whereas its application on wood production identified the difference in importance for financing of PA activities. More precisely, in the PAs of surface area between 456 and 7,543ha wood production had a little impact, whereas in the PAs over 7,543ha this impact was of larger importance.

#### 4. CONCLUSION

Based on the obtained results, it can be concluded that revenue generated from wood production, along with allocation of funds at republic and local level, represent a significant funding component for PA management. As a result of an increasing presence of international organisations in PA managing, international donations and aid represent funding components of growing importance; however, they are presently small and largely performed through international projects and support provided by republic institutions. In addition, revenue generated from tourism is of importance for certain PAs, however, statistical significance is determined only for allocations made by local and republic authorities and revenue generated from wood production. Furthermore, the impact of revenue from tourism is of importance for certain PAs; however, statistical significance is established only for allocations made by republic authorities and wood production. Financing of PA activities through wood production in the PAs of surface area between 456 and 7,543ha has only little impact, whereas in the other two analysed categories its impact is considerable. The reason for a low impact of this funding element in this PA category lies in the fact that PAs in this sample belong to the category of

special nature reserves, managed by non-governmental organisations and the church, as well as the PAs with no forest areas. If these facts and the answers specifying that funding depends entirely on primary activity, that is, wood production, are singled out, it can be concluded that most PAs finance their activities from wood-production. State funding, at the republic and local level, also proved statistically significant and that impact is of considerable importance, particularly in the PAs over 456ha. That points out to a large importance of financial allocations by state in the PAs covering large areas. Lack of importance of revenue generated from tourism is very common. Only certain managements pointed out to the importance of this element of funding, while PA surface area plays no importance in this respect. This reveals that PA management is not orientated on generating this form of revenue and that tourism is not developed in PAs. One of the reasons for the above-mentioned could be a complicated procedure for introduction of tourism fees supposed to be collected by managements. Certain forms of tourism fees do exist in PAs, but the recipients are local communities, that is, municipalities.

For that reasons, PA funding methods should be improved and the source of their revenue diversified in the following period. One of the important funding component in the region and in the world is the revenues generated from tourism, not adequately developed in Serbia, whereas in some countries they represent the most important funding component, even more important than subsidies by local and regional state authorities. Subsidies, as a form of funding, must also be orientated on improvement of PA infrastructure, equipment and staff training in the field of protected area management. The future studies ought to determine the PA needs, with a view to enhancing PA tourism offering, and consequently, improving the sources of funding. Furthermore, for the purpose of creating the most effective funding mechanism possible, it is necessary to establish stable and long-lasting sources of funding at the level of competent ministries, thus enabling conditions for a continuous improvement of management in protected areas.

### **Acknowledgment**

*This research has been conducted within the project "Governance assessment in the management of protected areas in the South Eastern European region" financed by the Ministry of agriculture, forestry and water management and FOPER project.*

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## **ПРОЦЕНА СИСТЕМА ФИНАНСИРАЊА ЗАШТИЋЕНИХ ПОДРУЧЈА У РЕПУБЛИЦИ СРБИЈИ**

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### **Резиме**

Финансирање заштићених подручја у Србији је једна од битних компоненара у систему управљања са ЗП. ЗП покривају ~5,89 % територије Републике Србије и њихова важност је веома битна зато што укључују подручја са очуваним природним екосистемима, пределе са културалним карактеристикама, која су издвојена из класичног коришћења природног ресурса. Србија као једна од будућих чланица Европске Уније (ЕУ) већ је започела одређене процесе усаглашавања свог законодавства као и усвајања одређених норми и правила у управљању са заштићеним подручјима. Систем заштићених подручја у Србији тако представља комплексну структуру различитих актера, правила, надлежности и институција укључених у рад ЗП. У систему финансирања ЗП одређена су три начина финансирања кроз буџет Републике Србије-дотације, на основу прихода остварених од стране организације која управља НП и донација. Како би се проценио утицај ових елемената финансирања издвојено је шест група механизма финансирања које су посматране у овом истраживању и упоредно приказане кроз три величине ЗП (до 456 ха, између 456-7543 и преко 7543 ха).

На основу добијених резултат може се закључити да управљачима ЗП битна компонента у финансирању представља приход добијен од стране производње дрвета као и издвајања на републичком и локалном нивоу. Због све већег присуства међународних организација у управљању са ЗП једна од компонената финансирања која све више има утицаја су међународне донације и помоћи, које су у овом моменту мале и углавном се спроводе кроз међународне пројекте и подршку која се пружа од стране републичких институција. Такође утицај прихода од туризма има значаја за поједина ЗП, али статистичка значајност је утврђена само за издвајања од стране локалних и републичких органа и производње дрвета.

## **ASSESSMENT OF THE SYSTEM OF FUNDING OF PROTECTED AREAS IN THE REPUBLIC OF SERBIA**

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### **Summary**

Funding of protected areas in Serbia is one of the key components in the system of PA management. PAs cover ~5,89 % of the territory of the Republic of Serbia and are of great importance, since they include areas with preserved natural eco-systems, areas with cultural characteristics, singled out from the standard use of natural resource. Serbia, as a prospective EU member state, has already initiated certain processes related to introduction of legislative reforms and adoption of norms and regulations on management of protected areas. Hence, the system of protected areas (PA) in Serbia represents a complex structure composed of different actors, rules, competences and institutions involved in functioning of PAs. The system of PA funding involves three methods of funding – through the budget of the Republic of Serbia – subsidies, through the revenue generated by an organisation

managing an NP, and through donations. In order to assess the impact of these elements of funding, six groups of funding mechanisms were selected and comparatively presented through three different PA sizes (below 456ha, between 456 and 7,543ha and over 7,543ha).

Based on the obtained results, it can be concluded that the revenue generated from wood production, along with allocations at the republic and local level, represent important components of financing for PA management. As a result of an increasing presence of international organisations in PA management, international donations and aid represent funding components of growing importance; however, they are presently small and largely performed through international projects and support provided by republic institutions. Additionally, revenue generated from tourism is of importance for certain PAs; however, statistical significance is determined only for allocations provided from local and republic authorities and wood production.

