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Igor Žiberna
Oddelek za geografijo
Filozofska fakulteta
Univerza v Mariboru
Koroška cesta 160, SI – 2000 Maribor, Slovenija
e-pošta / e-mail: igor.ziberna@um.si

Tehnični urednik / Technical Editor
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KAZALO - CONTENTS

REGIONAL AND NATIONAL IDENTITY EXAMINATIONS ON THE SLOVENIAN SETTLEMENTS OF HISTORICAL GUARDSMEN'S LAND

András Balogh
Ph.D., associate professor
Eötvös Loránd University
Faculty of Science
Savaria University Centre
Károlyi Gáspár sq. 4
Szombathely – 9700 Hungary
e-mail: balogh.andras@sek.elte.hu

Laura Kardos
geographer
Eötvös Loránd University
Faculty of Science
Savaria University Centre
Károlyi Gáspár sq. 4
Szombathely – 9700 Hungary
e-mail: kard.lau@gmail.com

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Abstract
Regional and national identity examinations on the Slovenian settlements of historical guardsmen's land
Our study focuses on the research of regional and national identity – it is mainly based on empirical survey realised with questionnaires - in the border regions of Slovenia, in the former part of the Guardsmen's Land, still inhabited by Hungarians. These settlements are: Hodoš (Őrihodos), Krplivnik (Kapornak) and Domanjševci (Domonkosfa). To compile the required sample, we started out from the census data and from the information of the local self-governments. In addition to the identity examination as the primary research target, the questionnaire allowed as an additional result the drawing up of the exact ethnic spatial structure of the researched settlements, which is also described.

Key words
Guardsmen's Land, national identity, regional identity

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1. Introduction

Identity and personal association, the phenomenon and concept of belonging to somewhere can be classified into the subject of several different sciences that are attached to each-other in certain points of examination. These include psychology, sociology, and not least geography. The scientific interest in identity can be traced back to the different interpretations of identity, or more precisely, to various forms of manifestation. Different branches of geography are usually interested in the social, cultural or ethnic identity and territorial-regional identities of a particular ethnic group. Our present study focuses on the research of regional and national identity – it is mainly based on empirical surveys realised with questionnaires - in the border regions of Slovenia, in the former part of the Guardsmen's Land, nowadays part of Slovenia, still inhabited by Hungarians. These settlements are: Hodoš, Krplivnik and Domanjševci.

According to our hypothesis, the national identity of the Hungarian minority beyond the borders is still significant, especially in the case of elder generations. The regional identity was metered in relation to the Guardsmen's Land, as well as a widely known ethnographic and cultural history region, without mentioning specific boundaries for the respondent, just simply using the term Guardsmen's Land. Naturally, depending on the people filling in the questionnaire, there may be a number of different interpretations of Guardsmen's Land, which we have further clarified with additional questions. It is assumed that this territorial affiliation is much weaker than national one, not only because of the uncertainty term usage of Guardsmen's Land which connotates differently to many people, but also because the separation role of the border in this issue is more powerful according to our view.

2. Methodology of research

In the three Hungarian populations of the former border settlement, nowadays part of Prekmurje, we conducted a questionnaire survey to evaluate the national and regional-belonging to the Guardsmen's Land-identity. To compile the required sample, we started out from the census data and from the information of the local self-governments.

In Slovenia, the census of 2011 register-based censuses were made. However, there is no separate register for the number of people belonging to national communities. In addition, there was a reorganization in the administrative system, where the settlements were classified as občine. On average, in Prekmurje there are 6 to 8 settlements that form a commune (Balizs, Bajmócy 2013). Population census data could only be obtained at the municipal level and refined by additional information about the settlement given by the local governments. This also meant that during the questionnaire it was not possible to compile a representative sample because we did not have more detailed information about the structure, just the number of the population provided by local governments. We tried to remedy this problem by taking a much larger sampling than we normally did. During the questionnaire we were aware of not questionning below the age of 18 and that gender equality would be fairly equal. We also took care of the territorial coverage: respondents came from all of the Hungarian habited streets (Tab.1).

Tab. 1: Distribution of completed questionnaires by age groups in the surveyed settlements of Prekmurje.

Settlement	Number of Hungarian population	Number of questionnaires		Age groups					
			18-29	30-39	40-49	50-59	60-69	70-79	80 <
Hodoš	106	46	4	5	5	8	9	10	5
Krplivnik	53	26	3	3	4	3	5	5	3
Domanjševci	155	64	8	6	8	12	13	10	7
In all	314	136	15	14	17	23	27	25	15

Source: Based on Republic of Slovenia Statistical Office and own questionnaire, ed. Kardos.

All in all, the questionnaires were surveyed in the three surveyed municipalities of Prekmurje, which account for more than 43% of the Hungarian population. In addition to the identity examination as the primary research target, the questionnaire allowed as an additional result the drawing up of the exact ethnic spatial structure of the researched settlements, which is also described.

3. The emergence and spatial extension of Western border region of Hungary

At the time of Conquest of the Fatherland, two major guards were built at the western end of historical Hungary: one in the Pinka valley, in the vicinity of Felsőőr (Oberwart), which was also named Upper-Guardsmen's Land, and is part of Austria now. The other guard site was established in the source region of the Zala River and was defined as a Lower-Guardsmen's Land (Csapó 2008) to distinguish it from the other. This is the area that is mentioned in the name of Guardsmen's Land today as well as in scientific circles, and basically covers the southwestern corner of Vas county and some settlements in Prekmurje, Slovenia (Fig. 1). After the peace treaty of Trianon, the Hungarian population of former settlements annexed to Austria has been significantly reducing to nowadays due to intensive assimilation, and today only four settlements are limited: Unterwart, Oberwart, Siget in der Wart and Jabing (Tóth 1975, Beluszky 2005). However, research in this area, reinforces the same origin and settlement history as is demonstrated in the Lower-Guardsmen's Land/ Guardsmen's Land (Csapó 2008).

The circumscription of the Lower-Guardsmen's Land or Guardsmen's Land is much more problematic, since most of its territory is still in Hungary, so the number of researches dealing with it is bigger and better known. The differences of opinion on the spatial extent beyond the general phenomenon that finding the boundaries of ethnographic landscapes can only be carried out along multiple dimensions (common historical past, religion, dialect, settlement structure, folk customs, folk costumes, local architecture and object use etc.). from the fact that the boundaries of ethnographic landscapes often blur over the time, and in many cases they are only kept by the consciousness of the people (Bazsika, Gyuricza 2008). The Guardsmen's Land is not ethnically and historically separated from its environment by expressive cultural features or geographical geographic features (Kósa 1998, Mohos 2008). Despite its low population density, it is socially and religiously extremely complex (Kósa 1998). Thus, it is no coincidence that we have different solutions in the spatial

delimitation from different authors (Dömötör 1960, Csiszár 1994, Beluszky 2005, Csapó 2008, Balogh, Baranyai 2014). Drawing ourselves from the discussion of the subject of delimitation, we consider the former villages of the Historical Guardsmen's Land, because these settlements belong to Guardsmen's Land in the study of all authors, and mention them among others IV. László published in 1280 or II. Rudolf 1595 donation letter. Hodoš, Krplivnik and Bükalja were part of the Historical Guardsmen's Land. Bükalja is part of Domanjševci today.

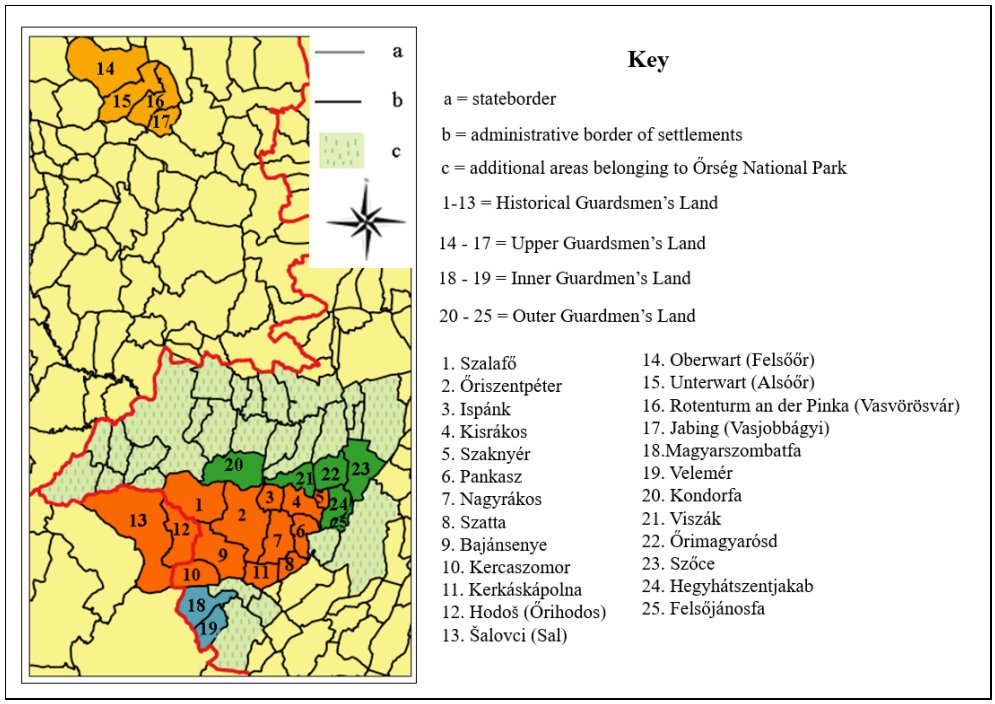

Fig. 1: Settlements of Guardsmen's Land.
Notation: The map based on the recent administrative borders, so it shows the researched municipalities (občina). Hodoš and Krplivnik create a municipality together under the name „Hodoš". Domanjševci is the part of Šalovci municipality with 5 other settlements.
Source: Based on Beluszky (2005) ed. Kardos.

4. The historical-ethnic characteristics of the Prekmurje, with special regard to the former guard-settlements

Following the Treaty of Trianon, Prekmurje-belonging to the Slovene part of the newly formed South Slavic State - were established of the areas that were disannexed from the Hungarian Vas and Zala counties. The Hungarians of Prekmurje faced several difficulties after disengagement, which had a major influence on the emergence of national consciousness. Most of the Hungarian intellectuals were expelled; from the large estates distributed during the land reform Hungarian nationality people could not receive. Hungarians had a small population (about 22,000), and the fact that the Prekmurje became relatively more advanced than was the motherland, so the population began to take over the Slovenian value system (Göncz 2006).

Today's number of Prekmurje Hungarians is estimated to be between 8 and 12

thousand, most of them living around Lendava, the center of the Hungarians in Slovenia. The Slovenian minority rights system is an exemplary, but bilingual education model can not curb the assimilation, and children born from mixed marriages are largely identified with the majority nation. The national identity of the Hungarians living here faces serious challenges (www.hunineu.eu).

The proportion of the Hungarian population of Hodoš, Krplivnik and Domanjševci belonging to the Guardsmen's Land is still significant (Tab.2).

Tab. 2: The ethnic distribution of the researched settlements in 2001.

Settlement	Hungarian (%)	Slovenian (%)	Other or unknown(%)	Population (capita)
Hodoš	42,1	47,6	10,3	252
Krplivnik	50,5	39,0	10,5	105
Domanjševci	51,5	35,9	12,6	301

Source: Based on Republic of Slovenia Statistical Office, ed. Kardos.

Hodoš is a small village with special settlement structure called 'szer'. It means many groups of houses which are situated on hilltops originally. Each 'szer' within a settlement has its own denomination. Hodoš consists of Felsőszer and Alsószer. Nowadays, we can't seperate easily the 'szers', because as the population grew, the intermediate areas became populated, many houses were built between 'szers'. Hodoš has a railway connection with Hungary and situated on the banks of the Dolanyi brook. Within the Guardmen's Land, Hodoš - and Krplivnik - not only smaller forests were typical to them, but also craft and commercial activity took place here. The pottery characteristic of Guardsmen's Land was rooted in the 16th century. The settlement name Őrihodos preserves the names of former guards or shooters (www.hodos.si). Nowadays it is mostly inhabited by Slovenians, the Hungarians are scattered here (Fig. 2).

Krplivnik is situated directly by the Hungarian border, which heritage and traditions are guided by the Ethnographic Collection of the Hungarian Nationalities Cultural Institute and the Hungarian National Self-Administration of Hodoš-Šalovci (www.vasivirtualismuzeum.hu). In the collection all the objects of the three settlements have given a place. Craft and merchant activities were significant here. On the steep shores of Krplivnik vineyard cultivation existed as well. The Hungarians account for about half of the population of the village living in scattered areas within the settlement (Fig. 3).

By the late 1800s Bükalja was a separate settlement belonging to the historic territory of Guardsmen's Land. In the middle of the 1500's it was owned by Batthyány family. At the end of the 1800s, it was first planned to unite Bükalja and Szomoróc, but because the lack of adequate administrative infrastructure, Bükalja was unified with Domanjševci about half a century later with Szomoróc and Kerca were joined as well (www.viasanctimartini.eu). It has been inhabited since prehistoric times, this is indicated by some two thousand years of tombs in its vicinity. The proportion of Hungarians is around 50%, according to an estimate of the municipality of Sal (with which Domanjševci is a joint municipality), more than 90% of the population, as a local woman said, "here everybody is Hungarian." Although, it is typical that people are more likely to undertake their belonging to Slovenes. Like most of the population, the Hungarians live mainly along the "main road" passing through the village (Fig. 4).

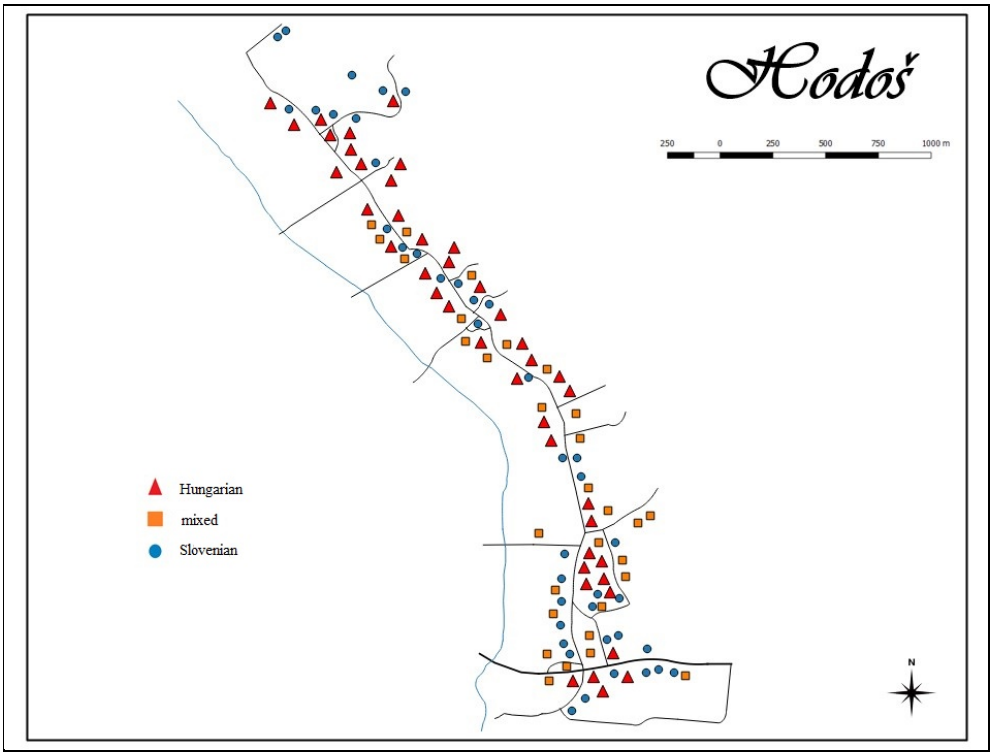

Fig. 2: The ethnic division of Hodoš by households in 2016.
Source: Based on own questionnaire survey, ed. Kardos.

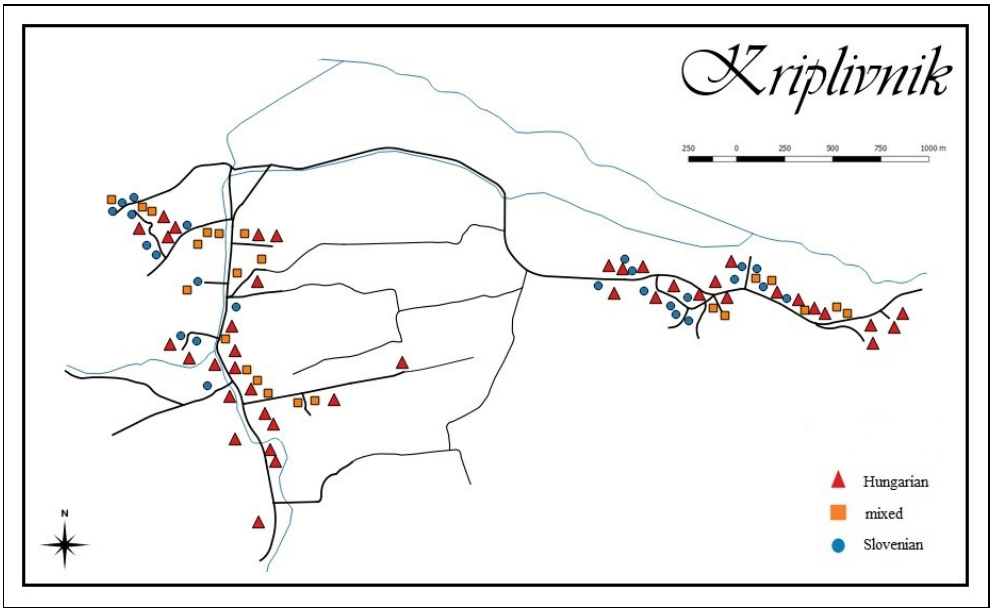

Fig. 3: The ethnic division of the Krplivnik by households in 2016.
Source: Based on own questionnaire survey, ed. Kardos.

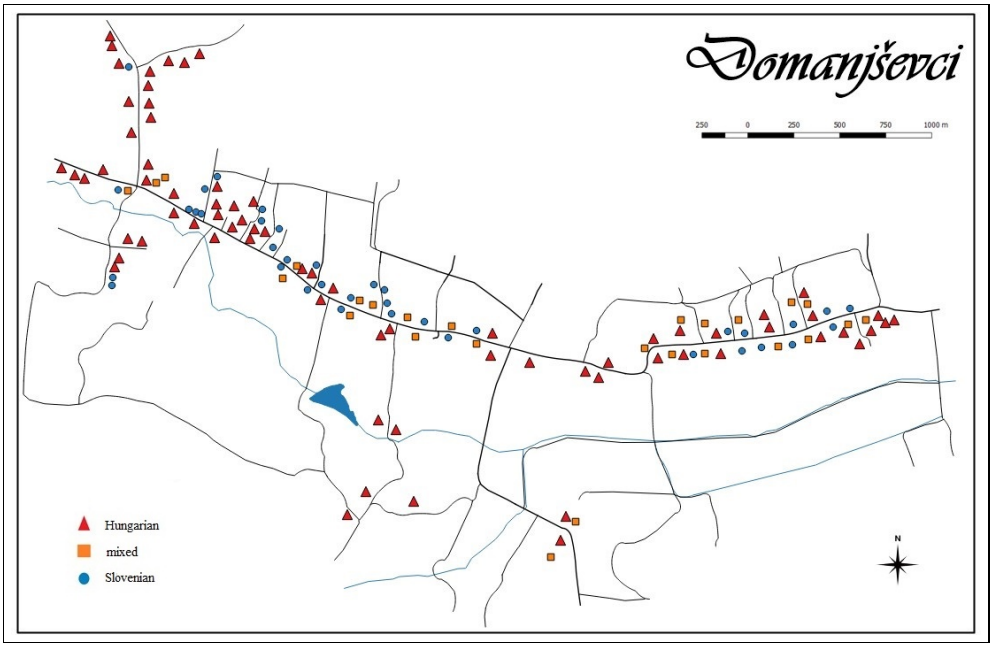

Fig. 4: Ethnic division of Domanjševci by households in 2016.
Source: Based on own questionnaire survey, ed. Kardos.

5. National identity

Identity to a nation depends on many factors, such as language, religion, culture, family relationships, and so on. The questionnaire contained the most important aspects of belonging to Hungarians as closed issues. The predetermined responses were prioritized - 1. very important, 2. most important, 3. not important, and 4. not at all important - had to rank the respondents. The listed criteria were as follows:

- For most of his life he lives among Hungarians,
- Be a Hungarian citizen
- Born in Hungary
- Live in Hungary
- Mother tongue is Hungarian
- Speak in Hungarian
- Consider himself as Hungarian
- Know and love Hungarian culture
- At least one parent must be Hungarian
- Do a Hungarian school
- Honor the Hungarian national flag
- Belong to a Hungarian ritual church.

By summarizing the points of the answers to each assumption, we got the final result in such a way that the lowest point amount (which need to cover the 1st is very important or 2. the most important answer to the question) was the most important criterion.

The most important aspect was to consider himself a Hungarian and to know and love Hungarian culture. Almost 100% of respondents on every researched settlement

consider these criteons very important. The Hungarian national flag as the emblem became known and loved became the third, ahead of us, in particular, and by surprise, the importance of the origin (Fig. 5).

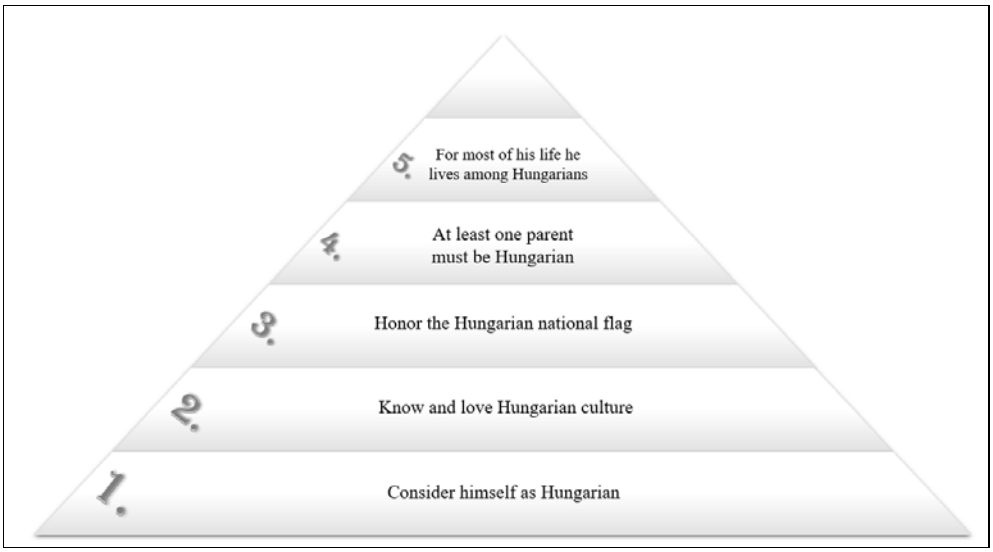

Fig. 5: The most important criterions to be Hungarian according the responders.
Source: Based on own questionnaire survey, ed. Kardos.

All in all, almost 90% of the surveyed population think that the respect of the Hungarian flag is fundamental in the fact that one can keep himself Hungarian. 100% of answerers in Domanjševci considered this criterion really important, but more than 88% of the Kapornakian people likewise considered it. The fourth most important criterion is that at least one parent must be Hungarian. The population of Krplivnik consider this statement to be the most important, 85% of the respondents.

The fifth one is one of the aspects that has played a role in preserving identity is that a citizen lives in the majority of his life among Hungarians. This was especially important for the the citizens of Domanjševci: every second respondent said it was very important to live in the Hungarian community for the preservation of identity. Perhaps not by accident, since almost all Hungarians live here and form a strong, cohesive community.

Language is an important building block for national identity, however it has not been included among the five most important aspects in our examined settlements (these are only the 6. and 7. most important statements). There were two statements about the language: one was to have a Hungarian mother tongue, the other to speak Hungarian. It can be said that the latter is considered more important everywhere, the mother tongue is less important. The other statements (attend Hungarian school, belong to a Hungarian ritual church, be a Hungarian citizen, born in Hungary, live in Hungary) are the less important criterions according the respondents.

6. Regional identity

Despite the fact that no question was given to the questionnaire for what area unit

we mean exactly under the Guardsmen's Land, 100% of the respondents meant the ethnographic landscape in the southwestern corner of Vas county in Hungary. It is true-as the survey showed- that there were significant differences in its spatial extent and its main characteristics.

Territorial identity, of course, can cover a lot of issues, and people belong differently from each territorial levels. So I was curious about what territorial level the people in the settlements of the investigated territorial units are most likely to identify, what they think they really belong to, which they most identify themselves. Respondents were asked to sort the number of different territorial levels by number, depending on which ones they most closely associate with. In the case of territorial identity, we understood the degree of identification with the majority of the settlements above the settlement level.

In the case of the Hungarian population of all three of the examined villages, the connection to the settlement level proved to be the strongest, even where they live today. This is followed by the region and the last it the identity of the Guardsmen's Land (Fig. 6).

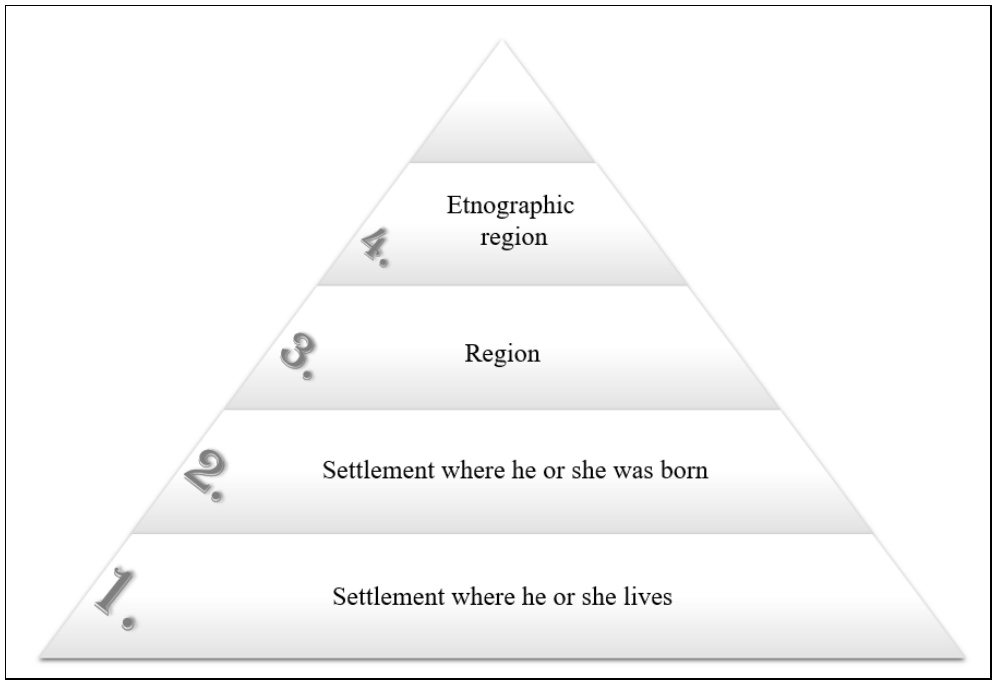

Fig. 6: The identification of the respondents with the different unit areas.
Source: Based on own questionnaire survey, ed. Kardos.

There was no questionnaire where one of the first two places would have been able to placed the attachment to the Guardsmen's Land. To further refine our responses, we looked at the percentage of respondents who ranked the ethnographic region in the third place (Tab. 3).

Tab. 3: Percentage of respondents who ranked the ethnographic region in the third place.

Settlement	ethnographic region in the third place (%)
Domanjševci	63
Krplivnik	50
Hodoš	42
In all	52

Source: Based on own questionnaire survey, ed. Kardos.

More than half of the respondents, in the third place, have already marked the Guardsmen's Land with the highest proportion was in the circle of the respondents of Domanjševci (65.6%). However, it is interesting that the Hungarians living in the three Prekmurje villages mostly consider their own settlement as belonging to the Guardsmen's Land and to themselves as people of Guardsmen's Land (Table 4). In this regard are the respondents of Domanjševci as well, so here is the identity connected to the Guardsmen's Land the strongest.

Tab. 4: Percentage of respondents who consider his own settlement belonging to Guardsmen's Land and himself as the habitat of Guardsmen's Land.

Settlement	Consider his own settlement belonging to Guardsmen's Land (%)	Consider himself as the habitat of Guardsmen's Land
Domanjševci	85	73
Krplivnik	69	58
Hodoš	67	57

Source: Based on own questionnaire survey, ed. Kardos.

According to surveys, however, despite the fact that the attachment to the Guardsmen's Land is not too strong, they are still aware that the place they live in is part of Guardsmen's Land as an ethnographic-historical area. This is also supported by the question of "What are the three things that come from the Guardsmen's Land?" Every second of the 136 questionnaires contained at least one attribute, but in Krplivnik the ratio was more than 70%. The answers are basically divided into four categories:

- Trianon, border, Hungary, Hungarians
- pottery, embroidery, craftsmanship
- gastronomy
- National Park, trip, nature.

The quantity and quality of knowledge about the Guardsmen's Land were dependent on education regardless of geographical location. Undoubtedly, more educated respondents were able to provide more information about the Guardsmen's Land. The proportion of those who did not answer was ¾ or even higher among low-school graduates (skilled workers, primary school, less than 8 grades).

We also tried to find out what the villagers understood as part of the Guardsmen's Land according to the respondents in their own country. In Slovenia, the three villages belonging to the Guardsmen's Land were mentioned by most, but almost half of the respondents thought of Središče and Čikečka vas, and every fifth person considered Lendava to belong to the Guardsmen's Land (Fig. 7).

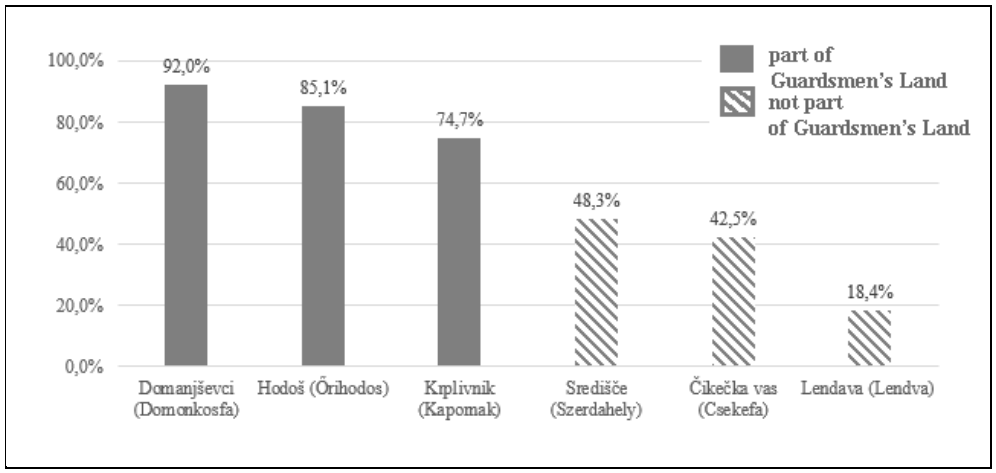

Fig. 7: The settlements which are part of the Guardsmen's Land according to the respondents.
Source: Based on own questionnaire survey, ed. Kardos.

This also means that most of the subjects involved in the empirical research say that the Guardsmen's Land in space is placed in such a way that it does not conform to the current state boundaries. As mentioned by the staff of the National Community of the Municipality of Prekmurje, "the Guardsmen's Land does not end at the Hungarian-Slovenian border".

7. Conclusion

In our study, we tried to reveal the national and regional identities of the living Hungarians situated in the Slovenian side of the former Hungarian border settlements, namely the Guardsmen's Land, through empirical research. National identity still remains on the other side of the Hungarian border, though it is increasingly weakening. Especially in the case of people under the age of 50, it can be observed that they increasingly associate with majority culture and language rather than Hungarian. Hungarians living beyond the borders say that the most important criterion of national identity is to consider themselves as Hungarian and to know and love Hungarian culture. In addition, they consider the origin, the symbols and the Hungarian community to be significant. Birth, living and Hungarian citizenship in Hungary are considered to be the least important factors in shaping Hungarian identity. The degree of identification with the Guardsmen's Land is weak despite the fact that they know about the Guardsmen's Land and even their place of residence is a guardian settlement, but their attachment to the area is no longer relevant. Deeper knowledge does not therefore have a stronger influence on territorial bond, it is simply that the geographical proximity, the common historical past, and the survival of certain traditions and customs are manifested beyond the boundaries of the more profound knowledge but not of strong emotional attachment. In the latter, we assume that the separation role of the state border plays a role, namely that, in the decades before the change of regime, this region functioned as a filter and security zone, the relations between the two regions weakened, which had a serious impact on the shapement of the Guardsmen's Land-image among the citizens of Prekmurje.

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http://www.hodos.si/?lang=hun

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REGIONAL AND NATIONAL IDENTITY EXAMINATIONS ON THE SLOVENIAN SETTLEMENTS OF HISTORICAL GUARDSMEN'S LAND
Summary

Our study focused on the research of regional and national identity – it is mainly based on empirical survey realised with questionnaires - in the border regions of Slovenia, in the former part of the Guardsmen's Land, still inhabited by Hungarians. These settlements are: Hodoš (Őrihodos), Krplivnik (Kapornak) and Domanjševci (Domonkosfa). In addition to presenting the results of our identity research, we briefly described the areas of our analysis and their short historical geographic features. Our hypothesis was that the national identity of the Hungarian minority beyond the borders is important – and this is especially true for the older generations – and it has been justified. We also found it important to examine which statements were found to be a criterion of being Hungarian by the respondents. According to the Hungarians, living beyond the borders, the most important of the national identity criteria is that they themselves claim to be Hungarians, and to know and love Hungarian culture. We have examined the identity of the region with regard to the Guardsmen's Land without mentioning the respondents the clarified territory, simply using the term 'Guardsmen's Land'. Our supposition was that this regional affiliation is much weaker than the national affiliation. Even their settlements are considered to be part of Guardsmen's Land, although their affiliation to the area is weak.

INEFFECTIVE ZONING IN PROTECTED AREAS OF BOSNIA AND HERZEGOVINA – CASE STUDY NP KOZARA

Edin Hrelja
Ph.D., Assistant professor
Department of Geography
Faculty of Science
University of Sarajevo
Zmaja od Bosne 33-35, 71 000 Sarajevo, Bosnia and Herzegovina
e-mail: edin_hrelja@yahoo.com

Nusret Drešković
Department of Geography
Faculty of Science
University of Sarajevo
Zmaja od Bosne 33-35, 71 000 Sarajevo, Bosnia and Herzegovina
e-mail: nusret2109@gmail.com

Amra Čaušević
Department of Geography
Faculty of Science
University of Sarajevo
Zmaja od Bosne 33-35, 71 000 Sarajevo, Bosnia and Herzegovina
e-mail: amric.causevic@yahoo.com

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Abstract

Ineffective zoning in protected areas of Bosnia and Herzegovina – case study NP Kozara

This paper aims to examine inadequate zoning in protected natural areas in Bosnia and Herzegovina, case study - National park Kozara. Protected natural areas are under increasing anthropogenic impact, therefore their adequate zoning is the key to sustainable development. The performed zoning of the Kozara National Park, as well as most of the protected areas in Bosnia and Herzegovina, is inadequate and it is mainly established in order to exploit natural resources. As a confirmation of the above, it indicates that the zone III of protection level, where traditional economic activities are permitted, the construction of housing and tourist infrastructure, occupy a significant part in protected areas. General and specific geographical methods and techniques of research are used in this paper. The main focus is GIS method because throughout which is established significant database and maps of inadequate protection zones in the parks.

Key words

NP Kozara, Bosnia and Herzegovina, protected areas, zoning, ineffective.

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1. Introduction

National Park Kozara iz proclaimed as protected area in 1967 and it is one of the four national parks in Bosnia and Herzegovina. Kozara Mountain (National Park) is located in the northwestern part of Bosnia and Herzegovina. It is a low, island mountain located between the Pannonian plain in the north and the south of the Dinarides, and bordered by the rivers Sava, Una and Vrbas. This area characterized by rare natural geographic elements, which make it unique enough to get a status national park.

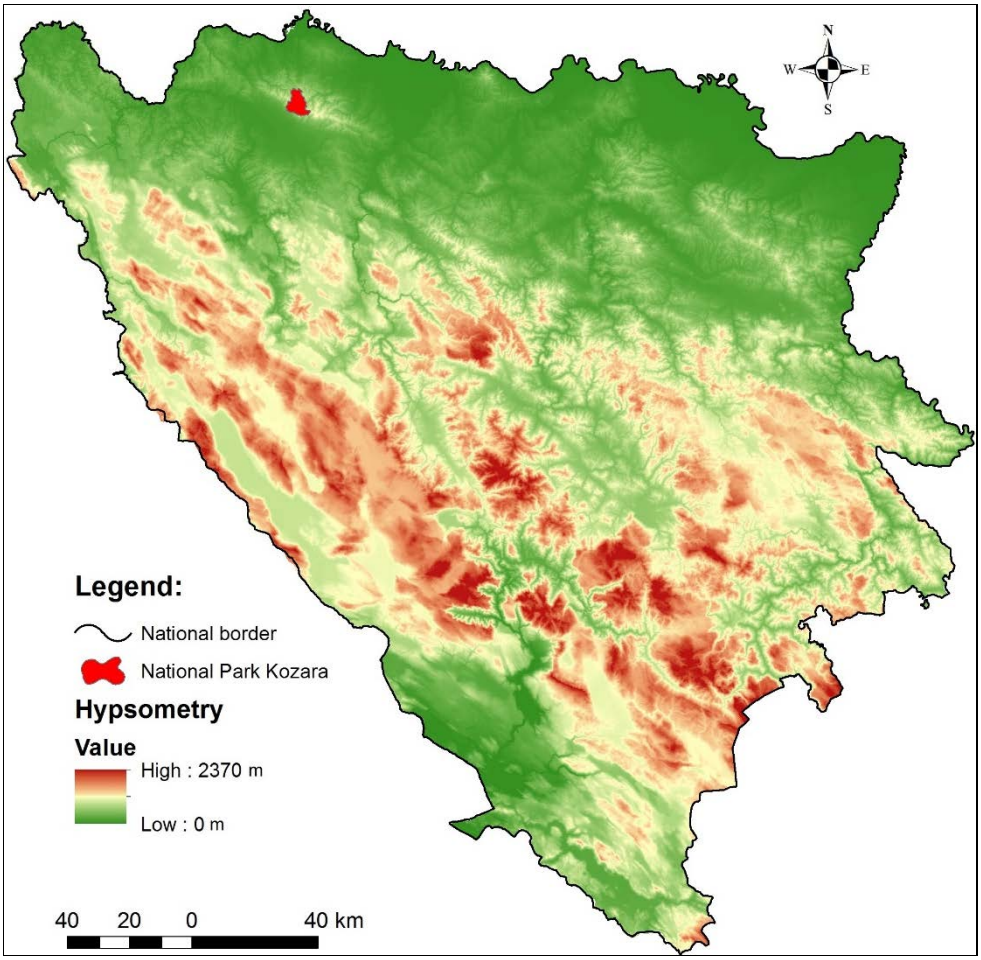

Fig. 1: Location of National Park Una.
Source: Authors.

Physical geographic uniqueness of studied area is emphasized through component geoecological, geomorphological, climate, hydrological and biogeographical elements, all of which makes this National Park an area of complekx landscape diversity. Beside natural components, this area also have rich cultural and historical heritage, which contributes to attractiveness in the context of tourism development (Hrelja 2017).

Natural values in the National Park are protected by the law on nature protection, while the areas of cultural significance are regulated in accordance with law provisions about cultural heritage. According to the Law on National Perk Kozara, territory of 3.907,54 ha in total size is divided into three different zones - nucleus zone or zone of protection of the basic phenomenon, active protection zone and zone of use.

2. Protected Natural Areas in Bosnia and Herzegovina

On the territory of Bosnia and Herzegovina, the first officially protected area was established in June 1954 in the southwestern part of the country in the Perućica stream. After that, in August 1954, the National Institute for the Protection of Cultural Monuments and Natural Rarities of the Republic of Bosnia and Herzegovina, protected Prokoško Lake on the mountain Vranica as a natural rarity (The Law on the Protection of Cultural Monuments from 1947). A few years later, in 1962, the first national park of Sutjeska in Bosnia and Herzegovina was established. Peručica was the nucleus of the protection of this park.

By the establishment of laws at the national level in 1964, categories of protection have been defined: a strict nature reserve, a nature reserve, a national park, special reserves, a protected natural landscape, a monument of nature, plant species, protected species, birdwatchers, wetlands, birds of prey. Protected areas in Bosnia and Herzegovina were established and declared in accordance with the defined legal provisions, where the national parks, Sutjeska and then Kozara in 1967 were first allocated as protected areas.

Until 1990, in accordance with the Law on Nature Protection and the Law on the Protection of Cultural, Historical and Natural Heritage, only 0.55% of the territory of Bosnia and Herzegovina was protected. According to the Spatial Plan of Bosnia and Herzegovina for the period of 1981-2000, it is planned that by the year of 2000, around 8,300 km² which is 16.2% of the total area of the country will be placed under different regimes and levels of protection.

The modern concept of protection in Bosnia and Herzegovina is in line with IUCN (International Union Conservation Nature). Based on the IUCN categorization six categories of natural areas have been identified in Bosnia and Herzegovina, within 29 areas are protected, of which 2 are strict nature reserves (category Ia), 4 national parks (category II), 16 nature monuments (category III), 5 nature parks - protected landscapes (category V) and 2 areas for resource management - park forest (category VI) on a total area of 127,557.4 hectares.

In addition to previously mentioned concept of protection, three Ramsar areas have been established in Bosnia and Herzegovina: Hutovo blato, Bardača and Livanjsko polje with total area of 0,6 km². In accordance with the European Directive for the Establishment of the European Ecological Network, the process of establishing NATURA 2000 has been initiated in Bosnia and Herzegovina, where all the most significant natural habitats have been identified, listed and mapped.

In addition, there are a large number of highly valuable natural areas on the territory of Bosnia and Herzegovina, which are planned for future protection, for the planning documents of entity, cantonal and municipal level. Analyzing the planning documentation at the entity level, it is planned to protect about 17% of the total area

in the Federation of Bosnia and Herzegovina, about 15.5% of the total area in the Republic of Srpska, wich is 16% of the total country territory.

Tab. 1: Protected natural areas in Bosnia and Herzegovina.

	Name	Entity	IUCN categorization	Area in hectares
A Strict Nature Reserve				
1	SNR Prašuma Janj	RS	I a	295,00
2.	SNR Prašuma Lom	RS	I a	297,82
Special Nature Reserve				
1.	SNR Gromiželj	RS	I b	831,33
2.	SNR Lisina	RS	I b	560,64
National Park				
1.	NP Kozara	RS	II	3.907,54
2.	NP Sutjeska	RS	II	16.052,34
3.	NP Una	FBiH	II	19.800,00 + 14970,21
4.	NP Drina	RS	II	6315,32
Monument of Nature				
1.	MN Pećina Orlovača	RS	III	27,01
2.	MN Pećina Ljubačevo	RS	III	45,45
3.	MN Žuta bukva	RS	III	0,50
4.	MN Pećina Rastuša	RS	III	11,39
5.	MN Prokoško jezero	FBiH	III	2.119,00
6.	MN Skakavac	FBiH	III	1.430,70
7.	MN Tajan	FBiH	III	3.591,98
8.	MN Vrelo Bosne	FBiH	III	603,00
9.	MN Jama Ledana	RS	III	28,26
10.	MN Vaganska pećina	RS	III	12,00
11.	MN Pećina Đatlo	RS	III	43,42
12.	MN Pavlova pećina	RS	III	13,40
13.	MN Girska pećina	RS	III	25,37
14.	MN Pećina pod lipom	RS	III	6,10
15.	MN Pećina Ledenjača	RS	III	7,40
16.	MN Velika pećina	RS	III	820,92
Nature Park - Protected landscape				
1.	NP Blidinje	FBiH	V	35.800,00
2.	NP Hutovo blato	FBiH	V	11.093,98
3.	NP Konjuh	FBiH	V	8.016,61
4.	NP Bijambare	FBiH	V	367,36
5.	NP Trebević	FBiH	V	400,20
Resource Management Area				
1.	RMA Univerzitetski grad	RS	VI	27,38
2.	RMA Slatina	RS	VI	35,73
Total protected areas at the RS level				29.364,32
Total protected areas at the FBiH level				98.193,04
Total protected areas at the level of Bosnia and Herzegovina				127.557,4

Source: Authors.

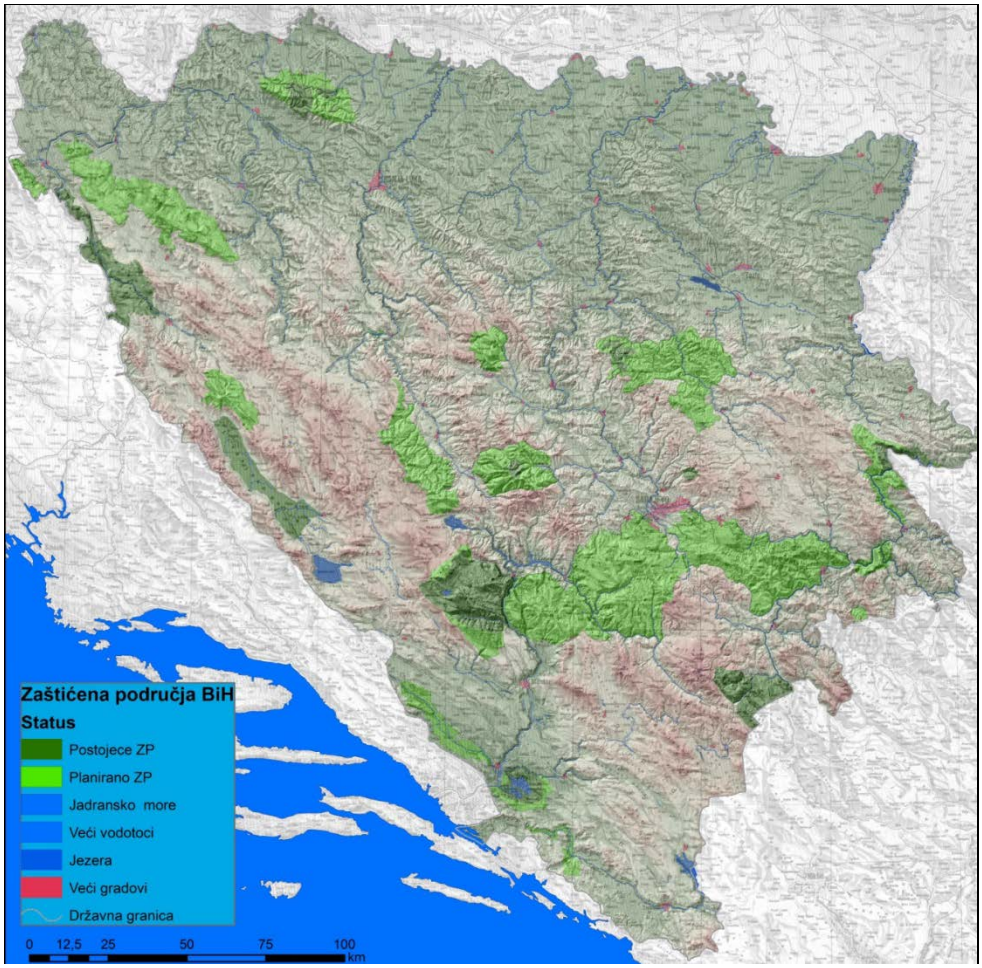

Fig. 2: Protected natural areas of Bosnia and Herzegovina.
Source: Authors.

2. Causes and Consequences of Inadequate Zoning in Protected Natural Areas - Case Ctudy NP Kozara

There is still no defined strategy for the establishment and management of protected natural areas at the state level in Bosnia and Herzegovina. Considering recent political and administrative arrangements in Bosnia and Herzegovina, spatial planning, planning documents and environmental management have been reduced to the entity, cantonal and municipal levels. Spatial planning (separation of protection zones) and environmental management is regulated by laws, as well as a number of regulations at the level of the Federation of Bosnia and Herzegovina, the Republika Srpska and the District of Brčko. Jurisdiction is transferred from the entity to the cantonal and municipal levels in the Federation of Bosnia and Herzegovina and at the municipal level in the Republic of Srpska. In the complex management structure, each of the cantons has competent ministries and their respective laws on spatial planning and environmental protection, and for each municipality there are specific decisions on spatial planning and protection of the environment. Municipalities in both entities

usually perform their responsibilities over environmental protection through various departments within municipalities such as utilities, spatial planning, urban planning, development, inspections, etc.

The first set of legal documents in the field of environmental protection were adopted at the entity level in 2003. There are a large number of laws and by-laws on environmental management at the state, entity and cantonal levels. However, the existing legislation is often not harmonized vertically (there are many gaps between laws at the state, entity and cantonal level), and even less horizontally (the environmental legislation differs at the entity level), which contributes to many disadvantages to sustainable environmental management. The largest number of protected nature areas in Bosnia and Herzegovina have been established on the basis of the categorization of the International Union for Nature Conservation (IUCN), whose principles are based on entity laws. Currently, the zoning of protected natural areas is inadequate and is mainly established in order to exploit natural resources, but not by law (Đug et al 2007).

In all protected areas in Bosnia and Herzegovina, only three management zones are separated: nucleus zone or zone of protection of the basic phenomenon, active protection zone and zone of use. The separation of the strict protection zone aims to preserve the fundamental phenomena of such areas. Activities that can be performed in the zone of strict protection are scientific research, monitoring of the protection, and interventions in extraordinary circumstances.

The zone of active protection includes areas of great value for which the conservation is permitted to carry out activities of maintenance, revitalization or creation of natural values important for nature conservation.The allowed activities are focused on area surveillance, scientific research, habitat monitoring, and restricted and tracked access to visitors on restricted and marked tourist routes. The use area includes areas of lower preservation value or areas where a certain degree of use is traditionally presentand is mainly managed for some other purposes significant for the development and functions of a protected natural area. In this zone there are settlements, areas of traditional agriculture, infrastructure corridors and areas for recreation and tourism.

As a confirmation that the performed zoning of protected natural areas is inadequate and is mainly established in order to exploit natural resources, it indicates that the zones of use or the third zone of protection,in which traditional economic activities are permitted, the construction of residential and tourist infrastructure, occupy significant areas in the Parks.

Thus, a case study found that 80% of the total area of NP Kozara belongs to III protection zone or zone of use. The Law on the Protected Area and Spatial Plan have enabled the exploitation and usurping of natural assets on the significant surface of the protected area (Hrelja 2017).

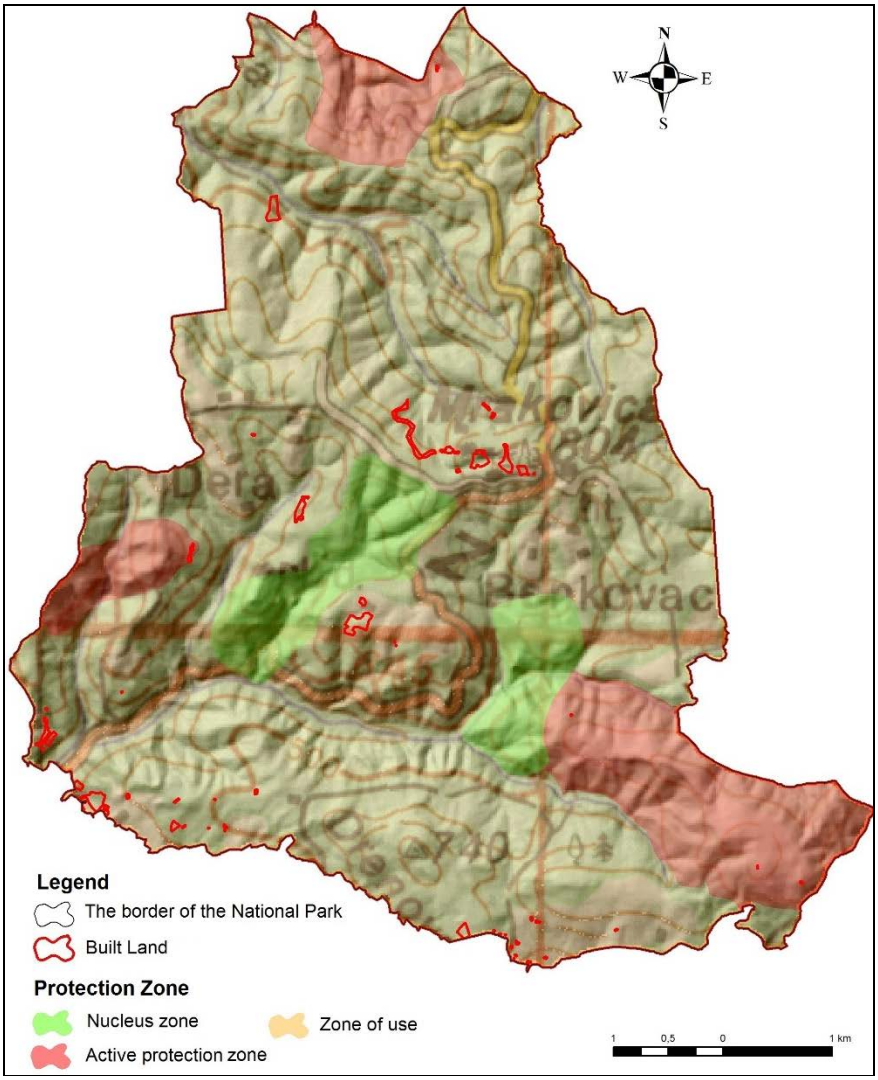

Fig. 3: NP Kozara – selected zone of protection.
Source: Hrelja, 2017.

As a result of inadequate zoning of protected natural areas in Bosnia and Herzegovina, there is a significant number of settlements with permanent population, which through the function of work (agriculture, forestry, extractive industry) and housing (construction of residential and auxiliary facilities or infrastructure) is inevitably reflected in the environment. The survey found that in the area of national parks and nature parks in Bosnia and Herzegovina, according to the last census in 2013, there were 35 permanent settlements with 7,789 inhabitants. In addition to direct and indirect - more or less seasonal impact of tourism, the space and environment of the parks is, to a considerable extent, burdened with the existential functions of their permanent population (Hrelja 2017).

Functional diversification of protected natural areas (function of free time) is the results of inadequate zoning. Considering this, significant area of space is spent on construction of cottages and accompanying infrastructure, and the construction of recreational and other tourist facilities. Also, in such areas, significant consumption and illegal use of natural goods is reflected through:collection and harvesting of plants, hunting and collected land animals, non-selective felling of forests, exploitation of mineral resources.

Analysis, where the vegetation cover structure was used as an indicator (the relationship between natural vegetation cover and anthropogenic surfaces) it has been found that there was a change in plant cover (reduction of plant communities). Natural vegetation in the period from 1979 to 2012 it was reduced in the total area from 6.7% (Fig. 4).

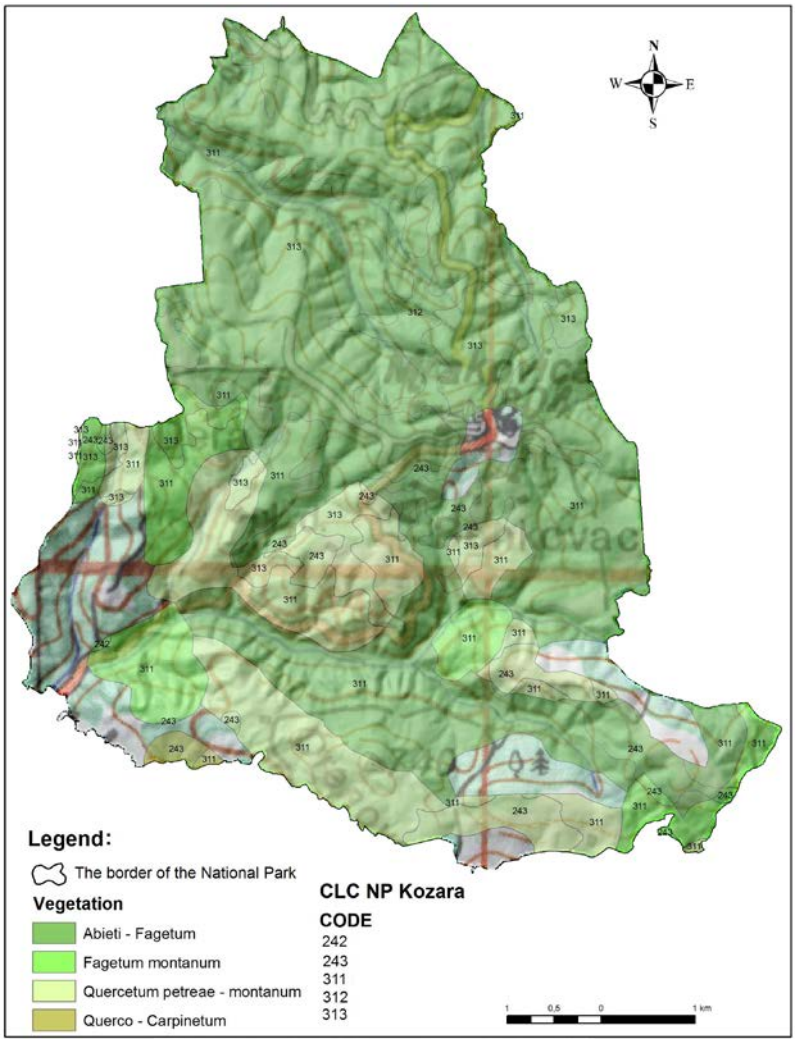

Fig. 4: Degree of degradation of natural vegetation in Kozara National Park.
Source: Hrelja, 2017.

As the main factors that have affected the changes in the natural environment the non-selective harvesting of forest resources and agriculture is allocated, which is the result of inadequate zoning in the National Park.

3. Conclusion

Based on the conducted research, it can be concluded that the development of protected natural areas, based on inadequately separated zones, is unsustainable. It results in the expansion of areas for economic activities and building valuation, at the expense of protecting the underlying natural phenomena in protected areas.

Zoning in protected areas in Bosnia and Herzegovina is inadequate and has been done on the basis of earlier use of space without adequate analysis of environmental, social and economic indicators.Also, zoning was carried out only within protected natural areas, without using spatially oriented zoning models to a wider area of influence, or without integrating protected areas with the environment.

The analysis shows significant differences on the level of vulnerability of ecosystems in protected natural areas of Bosnia and Herzegovina. They are function of differences in accommodation and geographical position, especially traffic availability and the vicinity of urban agglomerations as emitting centers of some national parks and nature parks, but also their recent political and territorial affiliation.

Therefore, in order to improve the concept of protection it is necessary to establish the management and zoning of protected natural areas in accordance with the principles of the International Union for Nature Conservation (IUCN), which would include the cooperation of all (interestingly different) stakeholders in the evaluation of the area.

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INEFFECTIVE ZONING IN PROTECTED AREAS OF BOSNIA AND HERZEGOVINA – CASE STUDY NP KOZARA

Summary

The aim of the research is to identify inadequate zoning in the protected natural areas in Bosnia and Herzegovina, with a special focus on the area of Kozara National Park. Protected natural areas are increasingly anthropogenically-influenced, which makes the adequate zoning a key to creating sustainable development. The first officially protected area in Bosnia and Herzegovina was established in 1954, while the first national park (Sutjeska) was distinguished in 1962. A few years later, Kozara National Park was declared a protected area and is one of four national parks in Bosnia and Herzegovina. The distinguished area is characterized by rare natural-geographical and socio-geographical elements that make it unique enough to obtain a status of a national park. The contemporary conservation concept in Bosnia and Herzegovina is in line with the IUCN (International Union for Conservation of Nature).Based on the IUCN categorization, six categories of natural areas have been identified in Bosnia and Herzegovina, within which 29 areas are protected over a total area of 127,557.4 hectares. According to the Kozara National Park Act, the territory of 3,907.54 ha is divided into three different zones - the nucleus zone, the active protection zone and the zone of use. However, the zoning of Kozara National Park, as well as most of the protected areas in Bosnia and Herzegovina, was established in order to exploit natural resources.In support of this statement is the fact that the zone of protection level III, in which traditional economic activities, the construction of residential and tourist infrastructure, are allowed, occupies most of the area in protected areas. Thus, the research found that 80% of the Kozara National Park area is in the III protection zone.With inadequate zoning, a significant part of the area is changed by the construction of residential infrastructure, the development of forestry, agriculture and tourism. Studies have identified the negative effects of inadequate management, which are reflected in the reduction of natural vegetation by 6.7% of the total area in the last thirty years. If a protected natural area is to be managed sustainably, the imperative is to resonate the area with the aim of protecting it, which is why the area was designated as such. The contemporary conservation concept in Bosnia and Herzegovina is in line with the IUCN (International Union for Conservation of Nature). Based on the IUCN categorization, six categories of natural areas have been identified in Bosnia and Herzegovina, within 29 areas are protected, of which 2 are strict nature reserves (category Ia), 4 national parks (category II), 16 nature monuments (category III), 5 Nature Parks - Protected Landscapes (Category V) and 2 Protected Area with sustainable use of natural resources - Forest Park (Category VI) over a total area of 127,557.4 acres.

VALORIZATION OF NATURAL TOURISM POTENTIALS IN THE BIHAĆ TOURISM GEOGRAPHICAL REGION

Aida Bidžan-Gekić
Dr., assistant professor
Department of Geography
Faculty of Science
University of Sarajevo
Zmaja od Bosne 33-35, 71 000 Sarajevo, Bosnia and Herzegovina
e-mail: aidabidzan@gmail.com

Haris Gekić
Dr., assistant professor
Department of Geography
Faculty of Science
University of Sarajevo
Zmaja od Bosne 33-35, 71 000 Sarajevo, Bosnia and Herzegovina
e-mail: hgekic@gmail.com

Lejla Žunić
Dr., assistant professor
Department of Geography
Faculty of Science
University of Sarajevo
Zmaja od Bosne 33-35, 71 000 Sarajevo, Bosnia and Herzegovina
e-mail: pmflejlazunic@yahoo.com

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Abstract
Valorization of natural tourism potentials in the Bihać tourism geographical region
The Bihać tourism geographical region is rich in diverse, pollution-free, natural tourism potentials that can be the basis for the development of more specific forms of tourism (mountain, hunting, rural, excursion-recreational, adventure, recreational-sports, fishing and ecotourism) of local and regional as well as national and international significance. This paper will present the most important natural tourism potentials of the Bihać tourism geographical region, their valorization, as well as their possibility of exploitation for tourist purposes. Moreover, the tourist traffic and accommodation capacities of this tourism geographic region will be shown. Finally, it will be concluded how these unique still unpolluted natural phenomena should be treated in order for them to remain the same for future generations.

Key words
Bihać, tourism geographical region, natural tourism potential, tourism valorization, tourism development, protection

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1. Introduction and methodology

The aim of this paper is to give an overview of all the natural tourist potentials of the Bihać tourism geographical region, the possibility of their valorization, which would contribute to the economic development but in case that these development plans and their implementation do not disturb the geoecological balance, that is, to develop only nature friendly tourism. The resource basis for modern tourism in the Bihać tourism geographical region must be methodologically processed on the basis of geographical, economic and socio-cultural research, in order to make a complete tourist offer. In this paper, the following general and special methods of regional geographic research will be used: method of regional geographic analysis and synthesis of tourism geographic factors, homogeneity method in spatial distribution of tourism geographic parameters in order to identify the tourism geographical potentials of the Bihać tourism geographical region, then the method of determining the spatial functional connections and relations primarily driven by tourism activity in order to develop the ones in the best possible way and less disturb natural environment.

In the process of valorization natural tourism potentials, different tourism geographical methods and valorization factors will be applied, with a very complex classification procedure (identification and analysis of attractive properties, spatial coverage, deployment, etc.) and categorization / ranking of tourism potentials (according to importance, seasonality, complementarity, etc). Natural tourism potentials are then divided into two groups: real and potential tourist potentials. In the evaluation itself, special attention was paid to their complementarity, the convenience of their tourist geographic location in relation to emitting markets, tourist routes and competitive reception areas, then existing and potential roads, which enable accessibility from emitting areas, etc. This detailed and complex analysis, classification and categorization of natural tourist potentials is enabled thanks to the use of professional and scientific literature, which consisted of spatial plans at the state, entity, cantonal and municipal level, then development plans and strategies (economic and tourism) of the cantons and municipalities, official websites of municipalities and tourist communities, as well as their own field research.

2. Bihać tourism geographical region

The Bihać tourism geographical region is located in northwestern Bosnia and Herzegovina and has a very favorable tourist-geographical position because it is located near the Republic of Croatia and its Plitvice Lakes, so tourists who visit this region very easily come and are happy to come to this beautiful yet non-polluted tourism geographical region, as well as its Una National Park. The area of this region is 4,374 km^2. In the territorial sense, the Bihać tourism geographical region consists of eight municipalities: Bihać, Bosanska Krupa, Bosanski Petrovac, Petrovac, Krupa na Uni, Bužim, Cazin, Ključ, Sanski Most and Velika Kladuša. This region according to the preliminary data from the 2013 census has 301,397 inhabitants, and the population density is 68.9 inhabitants/km^2 (Bidžan 2015, 64; Federal Office of Statistics FB&H, http://fzs.ba/index.php/popis-stanovnistva/popis-stanivnistva-2013/konacni-rezultati-popisa-2013/).

It extends over an altitude of 100-1,600 m. The great wealth and recognition of the Bihać tourism geographical region are natural beauties. Significant mountains of this area are Grmeč, Majdanska planina, Srnetica, Klekovača and Plješevica. It is

dominated by moderately warm and humid climates, and in the smaller part of the region continental climate. Average annual temperatures range from 8 - 12^{0}C. The average annual rainfall varies from 1,250 - 1.750 mm. This area is abundant with many rivers, among which it is necessary to single out the two most beautiful rivers Una and Sana. This region is rich in larger or smaller watercourses, warm springs, caves and forests that make up exceptional landscape values. They are distinguished by their authenticity, diversity and attractiveness, and the phenomenon of this area are certainly unpolluted waters and forests (Group of authors 1998, 17-21; Bidžan 2015, 64). In the biogeographical aspect, there are present ecosystems of: floodplain forests, mesophilic forests of sessile oak and common hornbeam, montane beech forests, beech-fir forests, dark coniferous forests and mountain pine (Pinus mugo) forests (Lakušić 1981, 41-70).

It is connected to the neighboring tourism geographical regions by common natural tourist potentials, as well as it is connected to Banja Luka by the rivers Sana and Una, and to the south-west Bosnian tourism geographical region by the mountains Osječenica and Klekovača (Fig.1) (Bidžan 2015, 66).

The Bihać tourism geographical region is connected to other regions by the main road M-5 (E761), that is to the Travnik and Banja Luka regions, and M-14.2 is connected to the Southwestern Bosnian region. In the area of this region, 468.4 km of regional roads and 344 km of main roads have been built. The northern part of the region is connected to the center by the main road M4-2, and the eastern part to the main road M-14. Moreover, through this region also passes the Una railway which connects the city of Bihać to the capital city, Sarajevo, and which, between these two final destinations, goes partly along the river Una (Spatial plan of the Federation of Bosnia and Herzegovina, http://www.vladatk.kim.ba/Vlada/Dokumenti/ppfbih/PPFBIH _SKRACENA%20VERZIJA%20-%2016_ 08_2012.pdf).

Regarding tourist traffic, the tourism geographic region of Bihać in 2017 had 50,297 tourist arrivals, of which 46.8% were domestic tourists and 53.2% foreign tourists. They made 75,976 overnight stays, of which 45.2% were domestic, while foreign tourists accounted for 54.8%. Most tourists come from Croatia, Slovenia, Italy, Germany, etc. (Federal Office of Statistics FB&H, http://fzs.ba/wp-content/uploads/2018/07/Kanton-1-Unsko-sanski-kanton.pdf).

The Bihać tourism geographical region, according to its functionality, belongs to the regions of leisure and recreation. This tourism geographical region has a modest significance for defining the tourist offer of Bosnia and Herzegovina, out of a total of 626 national monuments in Bosnia and Herzegovina, there are 47 national monuments in the Bihać region, but its natural beauties can be significantly used in its tourist offer on which one can develop the following specific forms of tourism: bathing, spa, cultural-manifestation, sports-recreational, adventurous, rural, fishing, hunting, ecotourism and others (Spatial Plan of Bosnia and Herzegovina 1980, 215; Bidžan 2015, 67).

Tourist infrastructure is underdeveloped. There is a lack of sports-recreational infrastructure and tourist signalling. The accommodation capacities are partly renovated, and the quality and capacities partially meet the tourist demand. In the period from 2008 to 2013, the number of beds in accommodation capacities was reduced by 45%, or from 900 beds in 2008 to 490 beds in 2012. In 2018, the situation improved slightly, so the Bihać tourism geographic region had 1,477 beds (33%

increase). The need for quality improvement is particularly expressed in private accommodation in households. Accommodation capacities that meet the required standards are mostly located in Bihać (Cantonal Development Committee USC: http://www.fzzpr.gov.ba/download/doc/Strategija+razvoja+USK.pdf/96340b2e33af434280c4050513ecbe11.pdf).

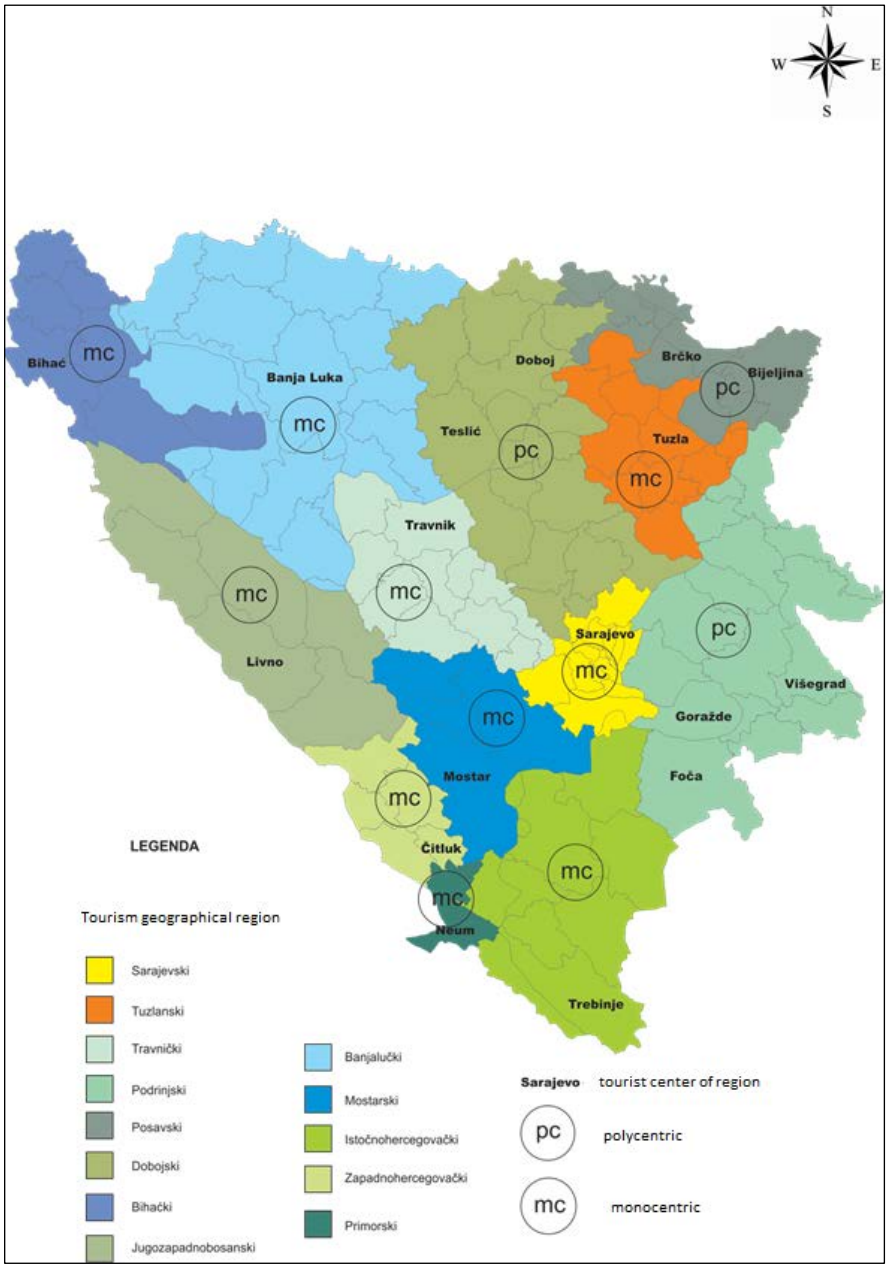

Fig. 1: Tourism geographical regions of Bosnia and Herzegovina.
Source: Bidžan 2011, 92.

2.1. Natural tourism potentials of the Bihać tourism geographical region

Significant wealth and recognition of the Bihać tourism geographical region is its natural beauty. Namely, this area abounds in many rivers, among which it is necessary, among others, to single out two of the most beautiful - the rivers Una and Sana with numerous tributaries, larger or smaller waterfalls, warm springs, caves and forests that have exceptional landscape values (Tab. 1). The natural values of this region are characterized by authenticity, diversity and attractiveness, and the phenomenon of this area are waters and forests. In the economic sense, the waters of the mentioned rivers are certainly emphasized, which, in terms of quality and quantity, represent a significant potential for multipurpose use. In particular, we should emphasize that this region is adorned by unpolluted soil, forests and various landscapes rich in natural beauties, which are suitable for the development of various specific forms of tourism. It is also necessary to mention the valuable cultural and historical heritage, which supplements this rare natural wealth. In the following table 1, we will present the most important natural tourist potentials of the Bihać tourism geographical region, as well as suggestions on which specific forms of tourism could develop on them (Fig.2).

Tab. 1: The most important natural tourist potentials of the Bihać tourism geographical region.

Natural tourist potentials			The predominant type of tourism
Geomorphological	Mountains	Grmeč	MT / HT / RT
		Plješevica	MT / HT / RT
		Lanište	MT / HT / RT
		Osječenica	MT / HT / RT
		Klekovica	MT / HT / RT
	Canyon	Una	NT / FT / ET
	Cave	Hrustovača in Sanski Most	SPT
		Dabarska in Sanski Most	SPT
Hydrographic	River	Una	ET/NT/ FT/ECOT
		Sana	ET/NT/ FT/ECOT
		Banjica	FT
		Krušnica	FT
		Sanica	FT
		Unac	FT
	Sources and springs	Svetinja in Bosanska Krupa	NT
		Dabarsko in Sanski Most	NT
		Zdena in Sanski Most	NT
	Thermomineral and mineral water	Spa Gata near Bihaća	HLT
		Spa Ilidža near Sanski Most	HLT
	Waterfall and riffle	Veliki slap on the river Una in Martin Brod	NT

		Milančev Buk on the river Una near Martin Brod	NT
		Srednji Buk on the river Una near Martin Brod	NT / ET
		Štrbački Buk on the river Una in Kestenovac – Martin Brod	NT / ET
		Bliha in Sanski Most	NT
Climatic	Moderately warm and humid	Bihać	KM / NT / FT / CT / TT / ST / ECOT
	Continental	Grmeč	MT /NT / HLT / RT / ECOT
Vegetal	Forests of willow and poplar trees		NT / HLT
	Forests of beech and beech-fir trees		NT / HLT
	Humid forests of sessile oak and common hornbeam		NT / HLT
	Forest of pine oak		NT / HLT

Source: Bidžan 2011, 104.
Key: MT- mountain tourism; HT – hunting tourism; RT – rural tourism; NT – nature tourism, ET – extreme tourism; HLT – health tourism; FT – fishing tourism; SPT – speleological tourism; CT – congress tourism; TT – transit tourism; ECOT – ecotourism.

A large part of these natural tourist potentials belongs to the National Park Una. The area of the National Park Una is located in the western most part of Bosnia and Herzegovina, in the area of the City of Bihać and belongs to the Una-Korana plateau, and it includes the valleys of the rivers Una and Unac and the orographic slopes of the mountains Plješevica, Grmeč and Osječenica. The Una National Park extends along the valley of the upper part of the Una river as well as around the canyon of the river Unac, the right tributary of the Una, up to the Krka river in the west (National park „Una“: http://nationalpark-una.ba/bs/stranica.php?id=4).

This area represents a unique natural entity in this part of Europe, valuable for preserving the total landscape and biological diversity. The vision of protecting the unpolluted Una River and its surroundings in the area of the declared National Park has been created over the decades, as a response of the local population, who has always been aware of the value of the area in which they live, and of threatening to disturb its fundamental natural features. With the adoption of the Law on the National Park Una in 2008, the area of total size of 19,800 ha is protected, which is administratively under the territory of the City of Bihać, and one smaller minor part extends in the territory of the municipality of Drvar. Out of the total area of the National Park, in the regime of strict and directed protection, there is a total of 13.500 ha, and in the directed development regime about 6.300 ha. The Law on National Park Una defines the boundaries, regulates the issues of protection, improvement and use of the National Park, management of the National Park, violations and administrative measures for non-compliance with this Law (National park „Una“: http://nationalpark-una.ba /bs/stranica.php?id=4). Below we will give a short description of the most beautiful and most attractive natural tourist potentials of the Bihać touristim geographical region, which are the Una and Sana rivers as well as Grmeč Mountain.

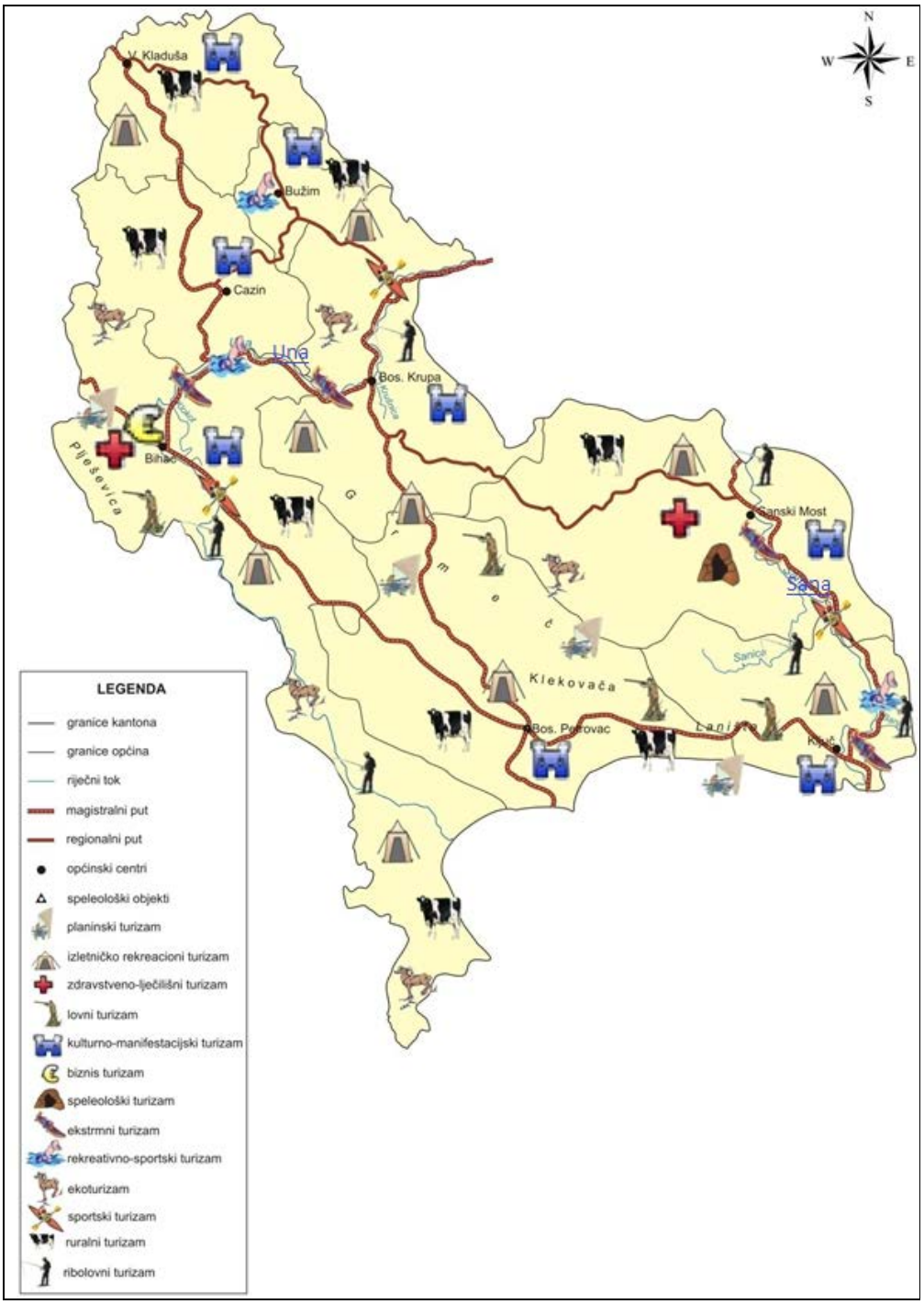

Fig. 2: Specific forms of tourism in Bihać tourism geographical region.
Source: Bidžan 2011, 108.

2.1.1. The river Una

The river Una is the most important feature of the Una National Park, which can rightly be said to be one and only river in Bosnia and Herzegovina which, with its beauty and richness of sedentary creations, stands out from the others. It springs in the village of Donja Suvaja below Stražbenica mountain in Croatia, and after about 12 km of flow, it flows through the territory of Bosnia and Herzegovina. The whole stream has a pure emerald green color of its water. In the upper stream, from the spring to Bihać, the total drop is almost 3 meters per kilometer. In this part, the Una carries the characteristics of a true mountain river and its sedentary overfalls, cascades and waterfalls represent the true pearls of beauty such as: a large waterfall in Martin Brod, Štrbački buk waterfall, Troslap, Dvoslap and Ripački waterfalls. Down the Martinbrod and Štrbački buk waterfalls water collides with a number of smaller and larger overfalls and waterfalls, creating unique sedentary creations that is a characteristic of this beauty. In the Una, there is a particularly interesting living world that contributes to the creation of sedentary creations. Mosses-bryophytes are suitable for keeping the precipitated calcite, making it an indispensable link in the process of creating and growing sedentary creations. The Una is a unique natural phenomenon on the territory of Bosnia and Herzegovina through its process of creating sedra (river tuff) and its phenomena. The stream of this river is 212.5 km long and ends near Jasenovac, where it flows into the Sava River (National park „Una“: http://nationalpark-una.ba/bs/kategorija.php?id=6; Bidžan 2015, 217). Due to the preservation of river tuff creations, the quality of water, the diversity of rare flora and fauna, which is abundant, and the wealth of many natural monuments, the Una River is among our most beautiful and most famous rivers, not only in Bosnia and Herzegovina, but also wider, therefore it has a great scientific, cultural - educational, aesthetic, landscape and tourist significance, and for this reason, it is one and only, unique Krajina karstic beauty. The river Una with its tributaries Unac and Sana is ideal for the development of recreational, sports, fishing, adventure / extreme and ecotourism (Fig.2). Recreational and sports tourism (swimming, diving, rowing, etc.) can be developed in areas that have well-kept city beaches, such as Bihać, Bosanska Krupa and Bosanska Otoka. Due to the richness of the fish fund (grayling, brown trout, rainbow trout, Danube salmon), it is also ideal for the development of fishing tourism. All three rivers are known in international tourism circles for rapids and waterfalls ideal for the development of adventure tourism (rafting, canoeing, kayaking). Due to its strong spring, the Una River water level is suitable for rafting during most of the year. During high water level, the water weight is IV class[1], and its rapids represent a real treat for fans of this sport. During low water levels, tourists can give in to the river and enjoy its crystal-clear waters, sedentary waterfalls, green shores and steep canyons. Moreover, every year at the Una and Sana there are held sports events "Una regata" and "Ključka regata", which gather a large number of domestic and foreign tourists (Una spring of life: http://www.unaspringoflife.com/en/study-work/6; http://www.unaspringoflife.com /hr/una/ manifestacije/7).

Below we will mention the most beautiful attractions of the Una River, and these are certainly its overfalls and waterfalls. The biggest and the most beautiful is the Štrbački

[1] Rafting is divided into six groups ("classes") by weight: Class 1: Quiet river with slow flow. Class 2: Some rapids or a stone, but rafting is not yet dangerous. Class 3: rapids, small waves, smaller waterfalls, but without major danger. Tourist rafting belongs to this class. Class 4: rapids, higher waves, rocks, higher waterfalls or falls, concentration and higher response needed. Only for more experienced rafters. Class 5: rapids, large waves, rocks, large waterfalls, requires very precise and concentrated management. The ultimate rafting class. Class 6: rapids, huge waves, large and extremely dangerous rocks and reefs, numerous pitfalls and falls, requires extremely skillful management of the raft without error. This class is extremely dangerous and with frequent fatalities.

buk, which consists of three sedentary sections, 40 m wide and 23.5 m high. It is located between Loskun and Kestenovac in the gorgeous Una valley. Together with the Great Waterfall is one of the most attractive and valuable monuments of nature. In the zone of waterfalls and overfalls there are interesting tourist activities within the recreational and sports and adventure tourism (Fig.2), such as rafting, kayaking, canoeing, then a special type of diving, so-called speed river diving[2], and all these activities bring together many tourists from Croatia, the Czech Republic, Hungary, France, Germany, and partially the sport event "Una regata", which has one of the most exciting rafting routes in Europe (National park „Una“: http: //nationalpark-una.ba/bs/rafting.php). The surroundings of the Štrbački Buk waterfall are suitable not only for recreational and sports and adventure tourism, but also for the development of excursion, fishing and eco-tourism. The second in terms of importance and attractiveness is the locality of the sedentary area in Martin Brod, which includes numerous waterfalls including Jala, Middle, Lower, and Great Waterfalls (Jalački, Srednji, Donji, Veliki). The Great Waterfall is the biggest and most beautiful part of Martin Brod. This waterfall has a sedentary barrier of 54 m high, and an average of 63 m^3/s of water flows over it (National park „Una“: http://nationalpark-una.ba /bs/rijeke.php). Tourists in Martin Brod come mostly for holiday, fishing, but also rich gastronomic offer. The area surrounding the waterfall is suitable for the development of the following specific forms of tourism: excursion, fishing, rural and ecotourism.

2.2.2. The river Sana

The river Sana wells up from three strong karst springs, in the karst plateau near the village of Donja Pecka - Jasenovi Potoci, near Šipovo. After about 1.5 km, these three springs are connected to one stream. In the lower stream, from the spring to Ključ, the river Sana is a very cold and clean river. From Ključ to Sanski Most it can be characterized as a transitional river and in that part of the stream, in the settlement of Vrhpolje, the Sana receives its biggest tributary, the river Sanica which flows from the direction of Grmeč. From Sanski Most and further, the Sana loses all the features of the karst river and takes on the characteristics of a normal river flow. From its spring up to the flowing into the Una, at a lenght of 138 km, the Sana has a fall of 303.7 m. Part of the stream to Sanski Most, 72 km long, has a drop of 262.5 m, and the rest of 41.2 m is a part up to Bosanski Novi. At the very entrance to Novi Grad there is also the mouth of Sana in the Una, and along with the rivers of Una and Neretva, it is considered one of the most beautiful and cleanest rivers in Bosnia and Herzegovina. It provides opportunities for the development of ecological, bathing, fishing and recreational-sports tourism (Fig. 2). Natural beaches and clean water allow the development of bathing tourism. Numerous rows and their wealth with various kinds of fish, among which the most appreciated is the Danube salmon from the Sana, enable the development of fishing tourism. Many sports competitions are organized at the Sana as well as at the Uni. Canoeing and rafting on the Sana is possible and much less dangerous than on the Una, especially for beginners (Association „Bistro“: http://www.bistrobih.ba/nova/rijeka-sana/, Temimović 2011, 90).

2.2.3. The mountain Grmeč

The mountain Grmeč extends along the northwestern part of Bosnia, about 70 km long between the streams of the Una and Sana River. The highest peak is Crni vrh (1,604 m). The legendary mountain Grmeč is famous for its memorial zones in insurrectional Jasenica and Korčanica (World War II), and then for Sanica, the oldest tourist village in Bosnia and Herzegovina, as well as the Grmeč bullfighting, and

[2] Speed river diving - extreme diving in a clean and fast river - battle with river rapids and underwater obstacles, fantastic and unrepeatable diving experience.

numerous natural tourist beauties, which become more attractive year after year for both domestic and foreign tourists (Bušatlija 1983, 27; Bidžan 2015, 151).

The surrounding municipalities are: Bihać, Bosanski Petrovac, Ključ, Sanski Most and Bosanska Krupa, which gives a very favorable tourist-geographical position to this mountain. There are conditions for development of recreational and sports tourism (skiing, mountaineering, mount biking). Furthermore, the Grmeč Hunting Reserve, which is full of wildlife (bears, wild boars, foxes, tetrao, etc.), is also widely known, and many hunters come for hunting, thus hunting tourism can be developed at Grmeč, too (Fig. 2). This mountain has no accommodation facilities, which is one major disadvantage in its tourist offer. At its base extends the spacious Podgrmeč with the lower mountain slopes of Majdan mountain and Srnetica, and it rests on the surrounding karst fields - Bravsko, Petrovačko, Bjelajsko and Lušci field, and the canyons and valleys - the Una, Japranska and Sanička valley. The wooded slopes of Grmeč are covered with coniferous and deciduous plants sprinkled with meadows and fields. Equally interesting are the various springs of rivers and lakes, as well as a multitude of caves, which complement all this diversity and composition of this relief. The natural balance of this mountain has not yet been disturbed, so ecotourism can be developed, and in authentic villages on its slopes there are ideal conditions for the development of rural tourism (Bušatlija 1983, 27; Bidžan 2015, 152).

2.2. Valorization of the natural tourist potentials of the Bihać tourism geographical region

Valorization of the natural tourist potentials of the Bihać tourism geographic region is a complex process of evaluation of all indicators which make the tourism potential specific and unique, for example, tourist-geographical position, attractiveness, ambience, compatibility, tourist attendance, etc, which are crucial for the development of certain specific forms of tourism, in order to create a complete tourist offer of this region. On the basis of the overall ratings of tourist indicators of some natural tourist potential, the general tourist values of the natural tourist potentials of the Bihać tourism geographical region were obtained, on the basis of which they were further ranked (Tab. 2).

In the tourist valorization of the Una River, the highest rating (5 - excellent quality and high market appeal) was obtained from the criteria of: tourist-geographical position, ambiance, attractiveness, compatibility and uniqueness, and the lowest rating (4 - very good quality and very good market appeal) was obtained from the criteria of: degree of utilization for tourist purposes, access to natural tourist motives and tourist attendance. The overall tourist value of this natural tourist potential is very high, amounting to 4.6, which means that the Una River has an international tourist significance (Tab.2).

The largest tributary of the river Una, the river Unac, received the highest grade (4 - very good quality and very good market appeal), from the criteria of uniqueness, and the lowest rating (1.5 - insufficient quality and small market appeal) from the criteria of access to natural tourist motives, which means that the local community needs to urgently improve the traffic infrastructure in this part of the tourism geographical region. The overall tourist value of this natural tourist potential is very low, amounting to 2.8, which means that it has a regional tourist importance (Tab.2), and in order to increase it one would have to improve the tourist infrastructure and tourist offer of this tourist potential.

Tab. 2: Valorization of the natural tourist potentials of the Bihać tourism geographical region.

NATURAL TOURIST POTENTIALS			TOURIST VALORIZATION										
			Tourist-geographic position	Ambience	Attractiveness	Compatibility	Uniqueness	Degree of utilization in touristic purposes	Access to natural tourist motives	Two-season possibility of exploitation	Tourist attendance	General tourist value	Rank
Geomorphological	Mountains	Grmeč	4,5	5	5	3	5	1,5	2	3,5	2	3,5	R
		Plješevica	1,5	4	4	3	5	1	2	2	1	2,6	R
		Lanište	1,5	4	4	3	5	1	2	2	1	2,6	R
		Klekovača	1,5	4	4	3	5	1	2	2	1	2,6	R
	Canyon	Una	3	4,5	4,5	3	5	1	3	2	1	3	R
	Cave	Dabarska, Sanski Most	3	3	3	2,5	2,5	2,5	2,5	2,5	3	2,7	R
		Hukavica, Velika Kladuša	3,5	4	4	3	5	1,5	1,5	1,5	1,5	2,8	R
Hydrographic	Waterfall and riffle	Veliki slap on the river Una, Martin Brod	5	5	5	5	5	4	4,5	2	4	4,4	N
		Štrbački Buk	5	5	5	5	5	4	4,5	3	4,5	4,6	M
		Bliha, Sanski Most	3,5	5	5	4	5	2,5	3,5	5	3	4,0	N
	River	10.Una	5	5	5	5	5	4	4	4,5	4	4,6	M
		11.Sana	5	4,5	4,5	4,5	4,5	4	4	4,5	4	4,4	N
		12.Unac	3	3,5	3,5	3	4	2,5	2,5	1,5	2	2,8	R
		13.Sanica	3	3,5	3,5	3	4	2,5	2,5	1,5	2	2,8	R
	Thermo-mineral and mineral water	14.Spa Gata near Bihać	3,5	3,5	3,5	3,5	3,5	2	3	1,5	2,5	2,9	R
		15.Spa Ilidža near Sanski Most	3,5	4	3,5	3,5	4,5	2	3	1,5	2,5	3,1	R

Climatic	Oceanic	Bihać	5	2	3	2,5	2	4	4	4	4	3,4	R
	Warm humid continental	Grmeč	5	2	3	2,5	2	4	4	4	4	3,4	R
Vegetal	Forests of willow and poplar trees		3	3	3	2,5	2,5	2,5	2,5	2,5	3	2,7	R
	Forests of beech and beech-fir trees		3,5	2,5	2,5	2,5	2,5	2	2,5	2,5	2,5	2,6	R
	Humid forests of white oak and ash		3,5	3	3	2,5	2,5	2,5	2,5	2,5	3	2,8	R
AVERAGE TOURIST VALUE			3,5	3,8	3,8	3,3	3,9	2,5	2,8	2,8	2,6	3,2	R

Source: Bidžan 2015, 505.

Key:

- 0 to 1.5 (inadequate quality and low market attractiveness) - are not suitable for tourist presentation and use;
- 1.6 to 2.5 (satisfactory quality and medium market attractiveness) - local tourist significance (L);
- 2.6 to 3.5 (good quality and good market attractiveness) - regional tourism significance (R);
- 3.6 to 4.5 (very good quality and very good market attractiveness) - national tourist significance (N) and
- 4.6 to 5 (excellent quality and high market attractiveness) - international tourist significance (M).

In the tourist valorization of the Sana River, the highest rating (5 - excellent quality and high market appeal) was obtained from the criteria of tourist-geographical position, and the lowest rating (4 - very good quality and very good market attractiveness) was received from the criteria of the degree of utilization in touristic purposes, access to natural tourist motives and tourist attendance. The overall tourist value of this natural tourist potential is high, amounting to 4.4, which means that it has a national tourist significance (Tab.2), and by upgrading the roads and tourist offer it would become international.

Waterfall Štrbački buk obtained the highest rating (5 - excellent quality and high market appeal), from the criteria of tourist-geographical position, ambiance, attractiveness, compatibility and uniqueness, and the lowest grade (3 - good quality and good market appeal) from the two-season exploitation criterion. The overall tourist value of this waterfall is very high, amounting to 4.6, which means that it has international tourist importance (Tab.2).

The waterfall in Martin Brod obtained the highest rating (5 - excellent quality and high market appeal) from the criteria of tourist-geographical position, ambiance, attractiveness, compatibility and uniqueness, and the lowest rating (2 - satisfactory quality and average market appeal) from the two-season exploitation criterion. The overall tourist value of this waterfall is high, amounting to 4.4, which means that it has a national tourist significance (Tab.2).

In the tourist valorization of Grmeč mountain, the highest grade (5 - excellent quality and high market appeal) was obtained from the criteria of ambience, attractiveness

and uniqueness, and the lowest rating (1.5 - insufficient quality and low market appeal) was obtained from the criteria of degree of utilization for tourist purposes, which means that the tourist board must urgently make a tourist offer of this beautiful unused Bosnian and Herzegovinian pearl. The overall tourist value of this mountain is low, amounting to 3.5, which means that it has a regional tourist significance (Tab.2), but by improving the roads and tourist offer it could be even higher.

3. Conclusion

Regardless of the specific type of tourism developed in the Bihać tourism geographic region, that tourism should take full account of current and future economic, social and environmental impacts, to take care of the needs of the local population, tourists, the sector, the environment and the destination itself. The principles of sustainability refer to the environmental, economic and socio-cultural aspects of tourism development. In order to achieve long-term sustainability in this region, an appropriate balance must be established between all three dimensions.

In order to preserve the pristine intact nature of the Bihać tourism geographic region, the development of sustainable tourism should implement the following:
1) To optimally exploit the resources of the natural environment that are a key element of tourism development, while retaining important geoecological processes and helping to protect the natural heritage and biodiversity of this region;
2) To respect the socio-cultural authenticity of this region, preserve their built and cultural heritage and traditional values, and contribute to intercultural understanding and tolerance;
3) To ensure that economic activities are sustainable and long-term, and that they bring social and economic benefits to all participants with fair distribution, among other things, employment stability, revenue opportunities in social services in the community, helping to eliminate poverty, greater inclusion of women and youth, and so on.

In order for the Bihać tourism geographical region to reach this level of development that would enable the development of sustainable nature friendly tourism, a longer period of time is needed and this ongoing process requires constant monitoring of the effects and introduction of the necessary preventive and / or corrective measures, if necessary. The goal of such a development of tourism would be primarily the protection of the natural environment, and at the same time the quality of the tourist offer and the competitiveness of the Bihać tourism geographical region in the tourist market, both regional as well as national and international, would be increased.

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VALORIZATION OF NATURAL TOURISM POTENTIALS IN THE BIHAĆ TOURISM GEOGRAPHICAL REGION

Summary

The Bihać tourism geographical region is located in northwestern Bosnia and Herzegovina and has a very favourable tourist-geographical position because it is located near the Republic of Croatia and its Plitvice Lakes, so tourists who visit this region very easily come and are happy to come to this beautiful yet non-polluted tourism geographical region, as well as its Una National Park. The Bihać tourism geographical region, according to its functionality, belongs to the regions of leisure and recreation.

This tourism geographical region has a modest significance for defining the tourist offer of Bosnia and Herzegovina. Tourist infrastructure is underdeveloped. There is a lack of sports-recreational infrastructure and tourist signalling. The accommodation capacities are partly renovated, and the quality and capacities partially meet the tourist demand.

The natural values of this region are characterized by authenticity, diversity and attractiveness, and the phenomenon of this area are waters and forests. In the economic sense, the waters of the mentioned rivers are certainly emphasized, which, in terms of quality and quantity, represent a significant potential for multipurpose use. It is also necessary to mention the valuable cultural and historical heritage, which supplements this rare natural wealth.

A large part of natural tourist potentials belongs to the National Park Una. This area represents a unique natural entity in this part of Europe, valuable for preserving the total landscape and biological diversity. In the tourist valorization of the Una River, the highest rating (5 - excellent quality and high market appeal) was obtained from the criteria of: tourist-geographical position, ambiance, attractiveness, compatibility and uniqueness, and the lowest rating (4 - very good quality and very good market appeal) was obtained from the criteria of: degree of utilization for tourist purposes, access to natural tourist motives and tourist attendance. The overall tourist value of this natural tourist potential is very high, amounting to 4.6, which means that the Una River has an international tourist significance.

The overall tourist value of the river Unac is very low, amounting to 2.8, which means that it has a regional tourist importance, and in order to increase it one would have to improve the tourist infrastructure and tourist offer of this tourist potential. In the tourist valorization of the Sana River, the overall tourist value is high, amounting to 4.4, which means that it has a national tourist significance, and by upgrading the roads and tourist offer it would become international. The overall tourist value of waterfall Štrbački buk is very high, amounting to 4.6, which means that it has international tourist importance. The waterfall in Martin Brod obtained the overall tourist value amounting to 4.4, which means that it has a national tourist significance. In the tourist valorization of Grmeč mountain, the highest grade (5 - excellent quality and high market appeal) was obtained from the criteria of ambience, attractiveness and uniqueness, and the lowest rating (1.5 - insufficient quality and low market appeal) was obtained from the criteria of degree of utilization for tourist purposes, which means that the tourist board must urgently make a tourist offer of this beautiful unused Bosnian and Herzegovinian pearl. The overall tourist value of this mountain is

low, amounting to 3.5, which means that it has a regional tourist significance, but by improving the roads and tourist offer it could be even higher.

SOSKOPOP HALOZE: PODPORNI SISTEM POTENCIALNIM UVELJAVITELJEM UKREPOV KOPOP NA NIVOJU TRAVIŠČ

Danijel Ivajnšič
Dr., prof. geografije in biologije, docent
Oddelek za geografijo in Oddelek za biologijo
Filozofska fakulteta in Fakulteta za naravoslovje in matematiko
Koroška cesta 160, SI - 2000 Maribor, Slovenija
e-mail: dani.ivajnsic@um.si

David Pintarič
Bratov Pihlar 9a
9240 Ljutomer, Slovenija
e-mail: david.pintaric@gmail.com

Sonja Škornik
Dr., prof. biologije in kemije, izredni profesor
Oddelek za biologijo
Fakulteta za naravoslovje in matematiko
Koroška cesta 160, SI - 2000 Maribor, Slovenija
e-mail: sonja.skornik@um.si

Mitja Kaligarič
Dr., uni. dipl. biolog, redni profesor
Oddelek za biologijo
Fakulteta za naravoslovje in matematiko
Koroška cesta 160, SI - 2000 Maribor, Slovenija
e-mail: mitja.kaligaric@um.si

Nataša Pipenbaher
Dr., uni. dipl. ing. kmetijstva, docent
Oddelek za biologijo
Fakulteta za naravoslovje in matematiko
Koroška cesta 160, SI - 2000 Maribor, Slovenija
e-mail: natasa.pipenbaher@um.si

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Izvleček

SOSKOPOP Haloze: podporni sistem potencialnim uveljaviteljem ukrepov KOPOP na nivoju travišč

Kmetijsko-okoljska-podnebna plačila (KOPOP) so namenjena ohranjanju in spodbujanju nadstandardnih kmetijskih praks, ki prispevajo k ohranjanju biotske raznovrstnosti in krajine, varovanju vodnih virov, ter s prilagoditvijo kmetovanja prispevajo k blaženju in prilagajanju podnebnim spremembam. Aktualne študije kažejo, da je vpetost kmetijskih gospodarstev (KMG) v ukrepe KOPOP zanemarljiva, predvsem na nivoju naravovarstveno pomembnih travišč, kljub velikemu potencialu na državnem nivoju. S tem razlogom smo razvili spletno in mobilno aplikacijo, ki bi v prvi vrsti informirala lastnike, katere površine travišč lahko vključijo v kateri pod-ukrep KOPOP in koliko denarnega nadomestila (vezanega na površino) lahko prejemajo, v primeru, da se odločijo za vključitev. Odziv prvih uporabnikov je bil zelo pozitiven, seveda pa v največji meri o vključevanju KMG v ukrepe KOPOP odloča denarno nadomestilo, ki je v trenutnem

programu 2014-2020 bistveno premajhno. Kljub temu bi tovrstni informacijski sistemi lahko v prihajajoči shemi Evropskega kmetijskega sklada za razvoj podeželja 2021-2026 pripomogli k boljšemu udejstvovanju ukrepov KOPOP, in to ne le na področju travišč, temveč tudi na drugih naravovarstveno pomembnih habitatih.

Ključne besede
kmetijska gospodarstva, mobilna aplikacija, naravovarstveno pomembna travišča, Slovenija

Abstract
SOSKOPOP Haloze: a decision support system for potential claimants of grassland-targeted agri-environment measures
The agri-environment measures (KOPOP) are intended to preserve and promote special agricultural practices that contribute to preserving biodiversity and landscape, protect water resources, and contribute to mitigation and adaptation to climate change through adaptation of farming. Current studies show that the integration of agricultural holdings in the KOPOP measures is negligible, especially at the level of high nature value grasslands, despite the great potential, at the national level. For this reason, we developed a web and mobile application that would primarily inform owners whose grassland areas can be included in a KOPOP sub-measure and how much monetary compensation can they receive if they choose to join. The response of the first users was very positive, but of course, the involvement of agricultural holdings in the KOPOP measures is highly correlated with the monetary compensation, which is significantly undermined in the current program 2014-2020. Nevertheless, such information systems could contribute to a better implementation of the KOPOP measures in the forthcoming scheme of the European Agricultural Fund for Rural Development 2021-2026, not only in the field of grassland, but also in other nature conservation-relevant habitats.

Key words
Agricultural holdings, mobile plication, high natural value grasslands, Slovenia

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1. Uvod

Sekundarna vrstno bogata ekstenzivna travišča so nastala z dolgo zgodovino lokalno prilagojene kmetijske rabe (Küster in Keenleyside 2009). Vzdrževanje ali ponovna uvedba tradicionalnih načinov upravljanja je zelo pomembno za ohranjanje tovrstnih habitatov ter njihove biotske in kulturne vrednosti (Dahlström s sod. 2013). Žal so sodobne kmetijske prakse skupaj z fragmentacijo in opuščanjem zemljišč v zadnjih desetletjih povzročile znaten upad biotske raznovrstnosti travišč širom Evrope (Cousins s sod. 2007; Kaligarič, Ivajnšič 2014). Evropska unija je v odgovor na vse večjo zaskrbljenost zaradi izgube biotske raznovrstnosti travišč uvedla kmetijsko-okoljske ukrepe, ki kmetom zagotavljajo finančno nadomestilo za izgubo dohodka in za izvajanje ukrepov, ki povečujejo biotsko raznovrstnost (Finn, Allhuallacháin 2012; Mewes s sod. 2015). Kmetijsko-okoljski ukrepi so bili tako prvič uvedeni leta 1985 pod pritiskom Združenega kraljestva in Nizozemske. Še danes sodijo med najpomembnejše ukrepe za uresničevanje okoljskih ciljev v agro-ekosistemih po Evropi (Batary s sod. 2015). Vključujejo različne programe v različnih državah članicah po vsej Evropi, sčasoma pa so se, na osnovi le-teh, razvile tudi številne agro-okoljske sheme (AOS). Koncept kmetijskih zemljišč visoke naravovarstvene vrednosti (VNV) in ohranjanje redkih vrst se je pojavil v devetdesetih letih. Kljub precejšnjim naporom pri podrobni pripravi shem pa je bil uspeh AOS v smislu ohranjanja travišč precej mešan (Mewes s sod. 2015).

V Sloveniji so več kot polovico skupnih kmetijskih zemljišč v uporabi v obdobju 2005–2013 zavzemali trajni travniki (Medmrežje 1). Le-ti se seveda razlikujejo po različni vrstni sestavi in pestrosti travniških združb (Kaligarič s sod. 2006; Škornik s sod., 2010; Mason s sod. 2013). Ker je število študij o učinkovitosti kmetijsko-okoljskih ukrepov omejeno med državami članicami (Sutcliffe s sod. 2014; Hülber s sod. 2017), smo svojo študijo omejili na učinkovitost treh specifičnih pod-ukrepov v slovenskem sistemu za kmetijske okoljske ukrepe v obdobju 2014–2020, ki imajo specifične cilje vezane na travišča visoke naravovarstvene vrednosti.

Program razvoja podeželja Republike Slovenije za obdobje 2014–2020 (PRP 2014–2020) ponuja možnosti za črpanje finančnih sredstev iz Evropskega kmetijskega sklada za razvoj podeželja (EKSRP). Z letom 2015 se je v okviru PRP 2014–2020, ki ga je Evropska komisija 13.2.2015 uradno potrdila, začel izvajati tudi ukrep kmetijsko-okoljska-podnebna plačila (ukrep KOPOP), ki je nadomestil obstoječi ukrep kmetijsko okoljskih plačil (KOP) iz Programa razvoja podeželja Republike Slovenije za obdobje 2007–2013. Ukrep KOPOP je namenjen ohranjanju in spodbujanju nadstandardnih kmetijskih praks, ki predstavljajo višje zahteve od običajne kmetijske prakse. Podpora je tako namenjena tistim kmetijskim gospodarstvom (KMG), ki pri gospodarjenju s kmetijskimi zemljišči prispevajo k ohranjanju biotske raznovrstnosti in krajine, varovanju vodnih virov, ter s prilagoditvijo kmetovanja prispevajo k blaženju in prilagajanju podnebnim spremembam (Program razvoja podeželja RS za obdobje 2014-2020; Medmrežje 2) Aktualne študije kažejo (Kaligarič s sod. 2019), da je vpetost KMG v ukrepe KOPOP zanemarljiva, predvsem na nivoju naravovarstveno pomembnih travišč, kljub velikemu potencialu, na državnem nivoju. Še več, razmerje med vključenimi travišči, ki so in niso naravovarstveno pomembni, v ciljne pod-ukrepe KOPOP (npr. ekološko pomembna območja posebnih traviščnih habitatov (HAB), travišča habitatov metuljev (MET) in območja pojavljanja ptic vlažnih ekstenzivnih travnikov (VTR)), je 1:1 (Kaligarič in sod. 2019). Posledično se veliko denarja porablja ne-namensko, kar ni v skladu z doseganjem ciljev ukrepov KOPOP in varstva narave nasploh.

V luči aktualnega stanja je bil glavni cilj te raziskave priprava orodja za podporo potencialnim uveljaviteljem ukrepov KOPOP na nivoju travišč (trajno travinje I, trajno travinje II, posebni traviščni habitati in traviščni habitati metuljev) v obliki spletne in mobilne aplikacije. Tako spletna kot mobilna aplikacija bosta potencialnega uveljavitelja ukrepov KOPOP za travišča usmerjala k potencialni ustrezni izbiri pod-ukrepa na ciljnem zemljišču/parceli. Na ta način bomo ključno doprinesli k reševanju težav prejšnjega in aktualnega kmetijsko-okoljskega programa, ki ne upošteva vhodnih podatkov o naravovarstvenem stanju v ukrep vključenih travišč. Hkrati bomo z aplikacijo ustvarili platformo za monitoring in ustrezno udejanjanje ukrepov KOPOP na nivoju travišč za aktualno (2014-2020) in prihodnjo (2021-2027) shemo kmetijsko-okoljskega programa.

2. Materiali in metode

2.1 Raziskovalno območje

Za potrebe razvoja informacijskega podpornega sistema smo izbrali raziskovalno območje, ki še posebej izstopa po problematiki bodisi opuščanja ali pa intenzifikacije travniških površin. Haloze so pokrajina nizkih terciarnih goric južno od Slovenskih goric, od katerih jih loči, na tem mestu ne preveč široko, Dravsko polje. Proti jugu prištevamo k temu območju vse gorice do Bočko - Maceljskega pogorja, na jugovzhodu in vzhodu pa sega do hrvaške meje. Po geološki sestavi so Haloze izključno iz terciarnih kamenin v večini miocenske starosti (Melik 1957). Miocenske plasti so iz mehkega laporja in peščenjaka. Ponekod je v majhni meri zastopan tudi litotamnijski apnenec (ob Dravi med Borlom in Zavrčem). Podnebje je subpanonsko, srečujeta in mešata se omiljena alpska in panonska klima.

Po delitvi M.Wraberja (1969) spadajo Haloze v subpanonsko fitogeografsko območje. Zupančič s sod. (1987) pa uvršča to območje v Haloški distrikt prepanonskega subsektorja jugovzhodnega sektorja ilirske province in evrosibirsko-severnoameriške regije. Gozdovi so razširjeni na večjih ali manjših površinah po celem območju, posebej pa zaznamujejo zahodni del, t.i. gozdnate Haloze. Negozdne površine, ki so v ospredju te raziskave, predstavljajo predvsem travniki in pašniki. Po deležu sledijo sadovnjaki in, v vzhodnem delu Haloz, vinogradi. V nižinah in na položnejših pobočjih v bližini naselij, prevladujejo intenzivno gojeni in gnojeni travniki razreda Molinio-Arrhenatheretea R. Tx. 1937. Na bolj strmih, predvsem južnih pobočjih, zlasti v zahodnih Halozah, pa še vedno najdemo lepo razvita ekstenzivno gojena suha travišča, ki spadajo v bolj mezofilno zvezo Mesobromion (Br.-Bl. et Moor 1938) Oberd. 1957 reda Brometalia erecti Br.-Bl. 1936 in razreda Festuco-Brometea Br.-Bl. Et R. Tx. Ex Klika et Hadač 1944 (Škornik 1998). Gre za travnike, ki imajo visoko naravovarstveno vrednost in jih je država, v sklopu omrežja Natura 2000, dolžna ohranjati v ugodnem stanju.

2.2 Obravnavani pod-ukrepi KOPOP

Za potrebe raziskave so bili izbrani pod-ukrepi, ki so najbolj izrazito usmerjeni v ohranjanje naravovarstveno pomembnih travišč na območju Haloz v obdobju 2014-2020. Sem sodijo pod-ukrepi Ohranjanje ekstenzivnega travinja (ETA), Ohranjanje posebnih traviščih habitatov (HAB) in Ohranjanje traviščih habitatov metuljev (MET). Za vstop v ukrep mora kmetijsko gospodarstvo (KMG) izpolnjevati določene pogoje upravičenosti. Obsegati mora najmanj 0,3 ha kmetijskih površin (kumulativno), vpisano mora biti v register kmetijskih gospodarstev (RKG), nosilec KMG pa mora imeti opravljen program usposabljanja s področja KOPOP vsebin in izdelan program aktivnosti.

V pod-ukrep ETA so lahko vstopili upravičenci na ravni cele države. Območja, na katerih so lahko upravičenci uveljavljali plačila za pod-ukrep HAB, so bila določena v uradnih evidencah Ekološko pomembnih območij Ministrstva za okolje in prostor (Medmrežje 3). Za pod-ukrep MET poleg že izpostavljenih veljajo še naslednje dodatne zahteve: kmetijsko gospodarstvo oziroma posamezne površine kmetijskega gospodarstva se morajo nahajati na ekološko pomembnih območjih, paša in košnja ni dovoljena med 1. julijem in 20. avgustom, torej v času razvoja metuljev na travniških rastlinah; osnovna obtežba z živino na KMG-ju znaša od 0,2 do 1,9 GVŽ-ja/ha kmetijskih zemljišč v uporabi; vsako drugo leto je potrebno obrezovati in redčiti obstoječe robne pasove dreves in živih mej hkrati pa je prepovedana uporaba mineralnih gnojil, fitofarmacevtskih sredstev, blata iz čistilnih naprav in mulja ter ostankov iz ribogojnic (Medmrežje 3).

Višina izplačil za izvajanje obravnavanih pod-ukrepov KOPOP je med posameznimi obdobji financiranja sicer nekoliko variirala, posledično pa smo za potrebe aplikacije iz Uradnega lista RS pridobili vrednosti za obdobje 2014-2020.

2.3 Identifikacija naravovarstveno pomembnih travišč na območju Haloz

S pomočjo karte habitatnih tipov (lasten vir 2016) smo definirali travišča visoke naravovarstvene vrednosti (VNV). Sem tako sodijo vsi Natura 2000 travniški habitati (FFH - rastlinski in živalski habitati ali habitatni tipi iz Priloge II Direktive o habitatih) ter nekateri drugi vrstno bogati, regionalno pomembni, tipi travnikov. Posledično smo habitate travnikov uvrstili v tri skupine: a) Natura 2000 travniki, ki so v ugodnem stanju, so bili opredeljeni kot habitatni tip z »zelo visoko VNV« in označeni s kodo »1«; b) Mezotrofni do evtrofni senožetni travniki z združbo Arrhenatherion (še vedno pogost Natura 2000 habitat v Sloveniji) so bili označeni z VNV oznako »2«; c) Travišča, ki niso bila v svojem optimalnem stanju zaradi motenj (pretirano gnojenje, zaraščanje ali so predstavljala tranzicijsko obliko v naravovarstveno manj pomembno travišče) so bila označena s VNV kodo »3« (doi: 10.1016/j.landusepol.2018.10.013; Tabela 2). Skupina »3« je posledica postopka kartiranja, saj so bile nekatere zaplate označene kot kombinacija dveh habitatov, enim travniškim in enim ne-travniškim (npr. gozdni travniki, travniški sadovnjaki, travniki v zaraščanju z grmičevjem, ruderalizirana travišča, skalnata travišča, itd.). Kot rezultat le tega so nastale kombinacije med opisanimi tremi skupinami (»1« z »3« ali »2« z »3« obravnavane kot »3«, »1« z »1«, obravnavane kot »1« in »2« z »1« obravnavne kot »2) ter čiste skupine »1« in »2«. Vse kombinacije smo upoštevali in oblikovali končno bazo travišč VNV (Kaligarič in sod. 2019).

2.4 Priprava podpornega sistema SOSKOP Haloze

Za razvoj sistema za podporo potencialnim uveljaviteljem ukrepov KOPOP na območju Haloz smo potrebovali naslednje prostorske podatkovne baze: (1) aktualne orto-foto posnetke (GURS 2016), ki so služili kot vizualizacijska podlaga, (2) meje naselij (https://www.stat.si/gis/) za orientacijo na podlagi orto-foto posnetkov, (3) podatke o prostorski razširjenosti in tipu travišč (karta habitatnih tipov 2016 [lasten vir]), (4) pripravljeno bazo travišč VNV ter (5) zemljiški kataster (GURS 2018). S pomočjo karte habitatnih tipov in pripravljen baze travišč VNV smo identificirali potencialna travišča, na katerih lastniki lahko uveljavljajo obravnavane ukrepe KOPOP. V nadaljevanju smo s pomočjo programske opreme ArcGIS (ESRI, 2019) poenotili bazo zemljiškega katastra z karto habitatnih tipov in bazo travišč VNV. Nastal je končni sloj travišč v Halozah z ciljnimi informacijami vezanimi na številko zemljišča/parcele (Tabela 1).

Preglednica 1: Informacije, ki jih dobi uporabnik ob kliku na izbrano zemljišče/parcelo.

Informacije	Opis
Naselje	ime naselja
SIFKO	šifra katastrske občine
Parcela	številka parcele
Površina	površina parcele (m^2)
Physis koda	koda habitatnega tipa po palearktčni habitatni tipologiji
Physis opis	opis habitatnega tipa
Ohranjenost	ohranjenost habitatnega tipa
N2000	Natura 2000 koda
PA ETA	potencialna površina za ukrep ETA (da=1; ne=0)
Denar ETA	višina nepovratnih sredstev v €
PA HAB	potencialna površina za ukrep HAB (da=1; ne=0)
Denar HAB	višina nepovratnih sredstev v €
PA MET	potencialna površina za ukrep MET (da=1; ne=0)
Denar MET	višina nepovratnih sredstev v €

V naslednjem koraku smo izdelali spletno aplikacijo (soskopop.fnm.um.si), ki omogoča prostorski pregled informacijskih slojev z zemljiščem/parcelo kot prioritetno prostorsko enoto in vsebino prikazano v Preglednici 1. Sestavljena je iz spletne strani, strežnika ploščic, spletnega aplikacijskega programskega vmesnika (API) in podatkovne baze. Gre za vmesnik, ki definira množico izhodnih točk, zahtev in odgovorov. Spletni API se od navadnega API razlikuje po tem, da komunikacija poteka po HTTP protokolu. Spletna stran je strukturirana in oblikovana z jezikoma HTML in CSS. Dinamični del je napisan v programskem jeziku JavaScript. Za prikaz zemljevidov je uporabljena knjižnica Leaflet, ki ploščice, ki sestavljajo zemljevid prejema iz strežnika ploščic in knjižnice jQuery, ki se uporablja za komunikacijo s spletnim API-jem. Podatkovno bazo poganja MySQL. Spletni API je napisan v programskem jeziku PHP in podpira naslednje zahteve: (1) LOAD (vrne poligone, ki se nahajajo v določenem prostorskem obsegu) in (2) FIND (vrne ID-je poligonov in prostorski obseg, ki ustreza iskalnim parametrom, ki jih je podal uporabnik) (Slika 1). Spletno aplikacijo smo pripravili tudi v mobilni obliki za uporabo z mobilnimi telefoni (dostopna po povpraševanju na dani.ivajnsic@um.si), ki jih poganja Android operacijski sistem. Ponuja enak pogled na podatke informacijskih slojev kot spletna aplikacija. Napisana je v programskem jeziku Java. Za hrambo in obdelavo prostorskih podatkov uporablja SpatiaLite podatkovno bazo. Prikaz zemljevidov je izveden z uporabo knjižnice osmdroid. Aplikacija deluje brez internetne povezave (offline) za kar je potreben predhodni prenos zemljevidov in informacijskih slojev.

```php
$requestResult["ids"] = array();

if(count($queryResult) == 0){
    echo json_encode($requestResult);
    return;
}

$minX = PHP_FLOAT_MAX;
$minY = PHP_FLOAT_MAX;
$maxY = PHP_FLOAT_MIN;
$maxX = PHP_FLOAT_MIN;

foreach ($queryResult as &$value) {
    $startingByte = 9;
    $numOfRings = unpack('Lrings', $value["polygon"], $startingByte)["rings"];
    $startingByte += 4;

    for($ring = 0; $ring < $numOfRings; $ring++){
        $numOfPoints = unpack('Lpoints', $value["polygon"], $startingByte)["points"];
        $startingByte += 4;
        $points = unpack('d' . $numOfPoints * 2, $value["polygon"], $startingByte);

        for($i = 1; $i < $numOfPoints * 2; $i += 2){
            if($points[$i] < $minX){
                $minX = $points[$i];
            }
            if($points[$i] > $maxX){
                $maxX = $points[$i];
            }
            if($points[$i + 1] < $minY){
                $minY = $points[$i + 1];
            }
            if($points[$i + 1] > $maxY){
                $maxY = $points[$i + 1];
            }
        }

        $startingByte += $numOfPoints * 8 * 2;
    }

    array_push($requestResult["ids"], $value["id"]);
}

$requestResult["boundingBox"] = array($minX, $minY, $maxX, $maxY);

echo json_encode($requestResult);
```

Slika 1: Izsek kode aplikacije SOSKOPOP.

2.5 Validacija podpornega sistema

Uporabnost sistema smo testirali z pomočjo naslednjega anketnega vprašalnika, ki so ga izpolnili lastniki ciljnih travišč v Halozah (N=40). Vpliv faktorjev spol, starost in izobrazbena struktura na uporabnost aplikacije SOSKOPOP in vključitev v ukrepe KOPOP smo preverjali s pomočjo χ^2 preizkusa v statističnem programskem paketu R (R Developement Core 2008).

3. Vprašalnik o razvoju in evalvaciji orodja za podporo uveljaviteljem kmetijsko-okoljskih-podnebnih plačil (KOPOP)

Spoštovani,

Pred vami je vprašalnik, s katerim želimo ugotoviti uporabnost aplikacije (orodja) za podporo uveljaviteljem kmetijsko-okoljskih podnebnih plačil (KOPOP). Vprašalnik je anonimen in vsi odgovori bodo skrbno varovani, rezultati pa bodo prikazani na način,

da iz njih ne bo mogoče razbrati identitete posameznika. Vprašalnik vam bo vzel 5-10 min.

Program razvoja podeželja Republike Slovenije za obdobje 2014−2020 ponuja možnosti za črpanje finančnih sredstev iz Evropskega kmetijskega sklada za razvoj podeželja. Z letom 2015 se je v okviru PRP 2014−2020, ki ga je Evropska komisija 13.2.2015 uradno potrdila, začel izvajati tudi ukrep kmetijsko-okoljska-podnebna plačila (ukrep KOPOP). Ukrep KOPOP je namenjen ohranjanju in spodbujanju nadstandardnih kmetijskih praks, ki predstavljajo višje zahteve od običajne kmetijske prakse. Aktualne študije kažejo, da je vpetost kmetov v KOPOP ukrepe predvsem na nivoju naravovarstveno pomembnih travišč, kljub velikemu potencialu, na državnem nivoju, zanemarljiva. Posledično se veliko denarja porablja nenamensko. V ta namen smo se odločili pripraviti aplikacijo (orodje), ki bi kmetijskim gospodarstvom pomagala pri prepoznavanju naravovarstveno pomembnih travišč.
Hvala za sodelovanje.

1. Zanima nas, če poznate ukrep kmetijsko-okoljskih podnebnih plačil (KOPOP). Ustrezno obkrožite.

DA NE MOGOČE

2. Če ste na zgornje vprašanje odgovorili pritrdilno, nas zanima, kje ste dobili informacije o ukrepu kmetijsko-okoljskih podnebnih plačil (KOPOP).

Pri vsaki postavki izberite številko od 1 do 3, ki najbolj odraža, kako pomemben je bil za vas posamezen vir informacije. Pri tem 1 pomeni, da je bil vir povsem nepomemben, 3 pa, da je bil zelo pomemben.

VIR INFORMACIJ	1	2	3
Tiskani mediji			
Televizija			
Splet			
Sosedje			
Ljudje iz stroke			

3. Če ste na prvo vprašanje odgovorili pritrdilno, prosim izpolnite naslednje trditve. Če ste na prvo vprašanje odgovorili z ne, to vprašanje preskočite.

Izberite ustrezno trditev.

TRDITEV	**DRŽI**	**NE DRŽI**	**NE VEM**
Vsako travišče je v KOPOP ukrepu.			
Ekstenzivna travniki so travniki, ki jih gnojimo po vsaki košnji.			
Intenzivni travniki so travniki, ki jih gnojimo po vsaki košnji.			
Posebne traviščne habitate želimo ohranjati zaradi določenih rastlinskih in živalskih vrst.			
Travišča habitatov metulja (MET) spadajo pod poseben ukrep, ker varujemo določeno rastlinsko vrsto, ki je pomembna za določeno vrsto metulja.			
S povečevanjem števila/površin travišč, ki so v KOPOP vplivamo na kvaliteto življenje ljudi.			
S povečevanjem števila/površin travišč, ki so v KOPOP vplivamo na kvaliteto krme za živali.			

4. Spoznali ste aplikacijo (orodje), ki bi naj pomagala pri odločitvi za ukrep KOPOP. Se vam zdi aplikacija uporabna?

DA NE MOGOČE

5. Če bi vedeli, da imate ustrezne površine, bi šli v ukrep KOPOP?
DA NE MOGOČE

6. Zdaj poznate aplikacijo (orodje), ki smo ga razvili, da bi kmetijskim gospodarstvom pomagala pri prepoznavanju naravovarstveno pomembnih travišč. Prosimo, če odgovorite na nekaj trditev.
Izberite ustrezno trditev.

TRDITEV	DRŽI	NE DRŽI	NE VEM
Aplikacija (orodje) se mi zdi uporabna in bi želel imeti dostop do nje.			
Aplikacija (orodje) je enostavna za uporabo.			
Nisem izvedel ničesar novega.			
Denarja je premalo, kljub temu, da zdaj poznam tip mojega travišča.			
Preko aplikacije (orodja) sem se seznanil glede tipa mojega travišča, kar mi je prineslo novo znanje.			
Preko aplikacije (orodje) je enostavno najti moje kmetijske površine.			
Ob uporabi aplikacije (orodja) se bodo lahko denarna sredstva ustrezneje namensko usmerila k ohranjanju travišč.			

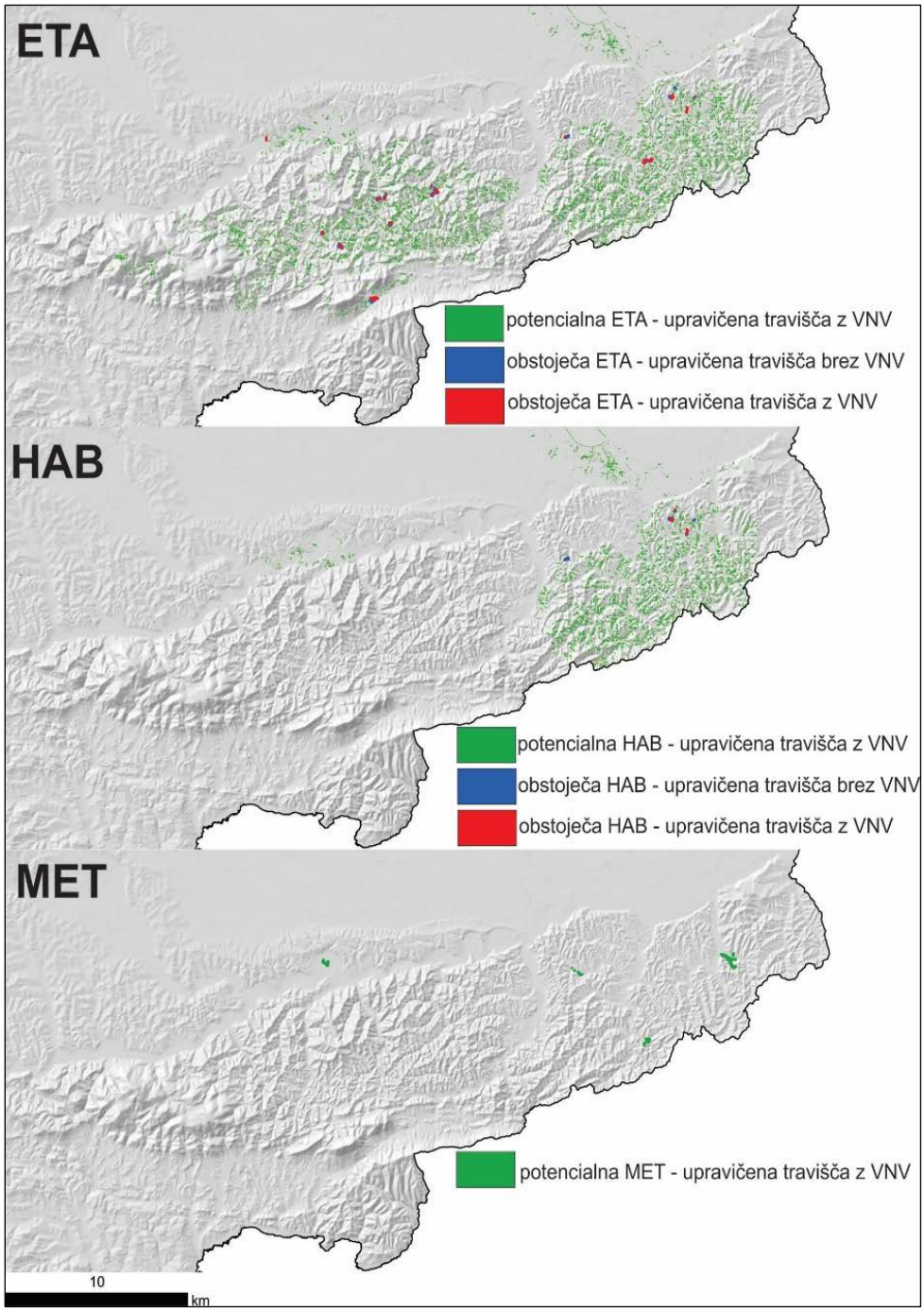
7. Za konec vas prosimo, da nam zaupate še nekaj podatkov o sebi.
Pri posamezni postavki označite, v katero skupino spadate.

ID	1	2	3	4	5
Spol	moški	ženski			
Starost	do 20 let	21-40 let	41-60 let	61 let in več	
Stalno prebivališče	mesto	predmestje	podeželje		
Najvišja zaključena izobrazba	osnovna šola	srednja šola	višja šola	visokošolski strokovni ali univerzitetni program/prva in druga bolonjska stopnja	magisterij ali doktorat znanosti

4. Rezultati in diskusija

Ugotovitve kažejo, da je razmerje med travišči z visoko in nizko naravovarstveno vrednostjo vključenimi v ukrepe KOPOP na območju Haloz neugodno. Od potencialno primernih travišč, je v ukrepe KOPOP vključenih le peščica (Slika 2). Zaskrbljujoče je dejstvo, da je med tistimi, ki pa vendarle so vključeni v ukrepe KOPOP, veliko takih, ki niso naravovarstveno pomembni oziroma imajo nizko naravovarstveno vrednost. S tem razlogom smo razvili spletno in mobilno aplikacijo, ki bi v prvi vrsti informirala lastnike, katere površine travišč lahko vključijo v kateri pod-ukrep KOPOP in koliko denarnega nadomestila (vezanega na površino) lahko prejemajo, v primeru, da se odločijo za vključitev. Informacijski sistem bazira na prostorski enoti zemljišča/parcele (Slika 3). Vizualizacijski vmesnik (Slika 3) omogoča enostaven prikaz travišč oziroma zemljišč/parcel, ki so bile identificirane za potencialno uveljavitev katerega od obravnavanih ukrepov KOPOP (ETA, HAB ali MET). S klikom na zemljišče/parcelo, ki jo lahko prepoznamo s pomočjo podlage aktualnih orto-foto posnetkov in vektorskega sloja naselij, se izpišejo ključne informacije za: (1) identifikacijo habitatnega tipa travišča, (2) za identifikacijo ustreznega pod-ukrepa KOPOP in (3) višino denarnega nadomestila v evrih, ki je vezana na velikost zemljišča/parcele. Omogočena je tudi možnost iskanja ciljne parcele s pomočjo vmesnika za iskanje pri čemer uporabnik izbere ime naselja in vnese številko zemljišča/parcele. Prav tako je možen vklop in izklop različnih plasti, ki kažejo potencialna ETA-, HAB- in MET-ustrezna travišča. Vizualizacija aplikacije za mobilne

telefone je prilagojena velikosti zaslona. Posledično se iskalni meni odpira s spustnim menijem.



Slika 2: Stanje udejanjenih ukrepov KOPOP v Halozah.

Slika 3: Izsek iz vizualizacijskega vmesnika spletne aplikacije SOSKOP Haloze.

Uporabnost aplikacije smo preverjali na terenu. Obiskali smo nekaj lastnikov ciljnih zemljišč (N=40) in s pomočjo vprašalnika pridobili povratno informacijo o kakovosti in smiselnosti tovrstnih informacijskih sistemov.

Če primerjamo vzorec po spolu in starostni strukturi ugotovimo (Tabela 2), da prevladujejo moški srednje starosti. Večina anketiranih je imela bodisi srednješolsko ali visokošolsko izobrazbo.

Preglednica 2: Značilnosti testnega vzorca potencialnih uporabnikov glede na spol, starostno strukturo in stopnjo izobrazbe.

MOŠKI		ŽENSKI		21-40 LET		41-60 LET		NAD 61 LET	
f	F %	f	F %	f	F %	f	F %	f	F %
25	62,5	15	37,5	11	27,5	21	52,5	8	20

STOPNJA IZOBRAZBE	f	F %
Osnovna šola	7	17,5
Srednja šola	19	47,5
Višja šola	12	30
Visokošolski strokovni ali univerzitetni program / prva in druga bolonjska stopnja	2	5

Polovica anketiranih je ukrepe KOPOP poznala, četrtina je izpostavila, da ukrepe deloma poznajo in četrtina, da ukrepov KOPOP praktično ne pozna. Preglednica 3 prikazuje strukturo odgovorov, ki so vezani na pridobivanje informacij o ukrepih KOPOP. Tiskani mediji, televizija in splet bistveno ne doprinesejo k poznavanju obravnavanih plačil. So pa kot vir informacij pomembni sosedje in strokovnjaki.

Preglednica 3: Vir pridobivanja informacij o ukrepih KOPOP.

VIR INFORMACIJ	ZELO POMEMBNO	POMEMBNO	POVSEM NEPOMEMBNO
Tiskani mediji	7	3	11
	33,33 %	14,29 %	52,38 %
Televizija	2	7	12
	9,52 %	33,33 %	57,14 %
Splet	5	3	13
	23,81 %	14,29 %	61,90 %
Sosedje	4	9	8
	19,05 %	42,86 %	38,10 %
Ljudje iz stroke	17	3	1
	80,95 %	14,29 %	4,76 %

V naslednjem koraku smo preverjali poznavanje vsebine KOPOP ukrepov (Tabela 4). Več kot polovica anketiranih (54%) pravilno ugotavlja, da vsako travišče ne spada v ukrepe KOPOP. Vzpodbudna je ugotovitev, da anketirani dobro poznajo razliko med ekstenzivnim in intenzivnim travnikom. Kljub temu skoraj tretjina (27%) ni prepričana, da je posebne traviščne habitate smiselno ohranjati zaradi njihove visoke biodiverzitete. Rezultati kažejo tudi, da je poznavanje zveze med floro in favno dokaj slaba saj se o tej trditvi ni opredelila polovica anketiranih. Kakorkoli, skoraj polovica (45%) se jih strinja, da ukrepi KOPOP vplivajo na kvaliteto življenja ljudi, nekoliko nižji je odstotek takih (32%), ki se s trditvijo ne strinjajo. Manj kot polovica anketiranih (41%) meni, da ukrep KOPOP vpliva na kvaliteto krme za živali, 36% anketiranih pa se s tem ne strinja.

Preglednica 4: Poznavanje vsebine ukrepov KOPOP za travišča.

TRDITVE	DRŽI	NE DRŽI	NE VEM
Vsako travišče je v KOPOP ukrepu.	5	12	5
	22,73 %	54,55 %	22,73 %
Ekstenzivni travniki so travniki, ki jih gnojimo po vsaki košnji.	0	20	2
	0	90,91 %	9,09 %
Intenzivni travniki so travniki, ki jih gnojimo po vsaki košnji.	21	1	0
	95,45 %	4,55 %	0%
Posebne habitate travišč želimo ohranjati zaradi določenih rastlinskih in živalskih vrst.	14	2	6
	63,64 %	9,09 %	27,27 %
Travišča habitatov metulja (MET) spadajo pod poseben ukrep, ker varujemo določeno rastlinsko vrsto, ki je pomembna za določeno vrsto metulja.	10	1	11
	45,45 %	4,55 %	50%
S povečanjem števila/površin travišč, ki so v KOPOP vplivamo na kvaliteto življenja ljudi.	10	7	5
	45,45 %	31,82 %	22,73 %
S povečanjem števila/površin travišč, ki so v KOPOP vplivamo na kvaliteto krme za živali.	9	8	5
	40,91 %	36,36 %	22,73 %

V zadnjem koraku smo skušali izmeriti kako uporabna je aplikacija SOSKOPOP (Preglednica 5). Več kot polovici anketiranih (67%) se zdi aplikacija uporabna. Večina (79%) si želi imeti dostop do aplikacije. 68% anketirancev meni, da je aplikacija enostavna za uporabo, skoraj tretjina (26%) pa se s tem ne strinja. Le 21% jih meni, da niso izvedeli ničesar novega. Jasno je izpostavljena problematika denarnih nadomestil, ki so premajhna. Dobra polovica anketiranih (55%) se strinja, da jim je seznanitev s tipom njihovih travišč, preko aplikacije, doprineslo novo znanje. Visok delež (65,79 %) jih ugotavlja, da je s pomočjo razvite aplikacije enostavno poiskati lastne kmetijske površine, a se dobra tretjina (34%) s tem ne strinja. Zaznavna je

neodločnost pri opredelitvi, da se bodo s pomočjo aplikacije oziroma tovrstnega informacijskega sistema, denarna nadomestila v prihodnje uporabljala bolj namensko oziroma v korist ohranjanja vrstno bogatih ekstenzivnih travišč.

Preglednica 5: Uporabnost aplikacije SOSKOPOP.

TRDITVE	DRŽI	NE DRŽI	NE VEM
Aplikacija (orodje) se mi zdi uporabna in bi želel imeti dostop do nje.	30	4	4
	78,95 %	10,53 %	10,53 %
Aplikacija (orodje) je enostavna za uporabo.	26	10	2
	68,42 %	26,32 %	5,26 %
Nisem izvedel ničesar novega.	8	30	0
	21,05 %	78,95 %	0,00 %
Denarja je premalo, kljub temu da sedaj poznam tip mojega travišča.	28	2	8
	73,68 %	5,26 %	21,05 %
Preko aplikacije (orodja) sem se seznanil s tipom mojega travišča, kar mi je prineslo novo znanje.	21	15	2
	55,26 %	39,47 %	5,00 %
Preko aplikacije (orodje) je enostavno najti moje kmetijske površine.	25	13	0
	65,79 %	34,21 %	0,00 %
Ob uporabi aplikacije (orodja) se bodo lahko denarna sredstva ustrezneje namensko usmerila k ohranjanju travišč.	18	3	17
	47,37 %	7,89 %	44,47 %

Seveda so na izbor trditev vplivale nekatere značilnosti našega vzorca. Zaznaven je vpliv spola, starostne strukture in stopnja izobrazbe ($\chi^2 > \chi^2_{crit}$, $p < \alpha$, $\alpha = 0.05$) na uporabnost aplikacije SOSKOPOP in vključitev v ukrepe KOPOP. Smiselnost in uporabnost aplikacije SOSKOPOP je visoka predvsem v očeh višje izobraženih moških, srednje starosti.

5. Zaključek

Ugotovili smo, da je na območju Haloz implementacija ukrepov KOPOP, v primerjavi z preostalim delom Slovenije, kjer je situacija prav tako alarmantna, še posebej slaba. Če smo v predhodni študiji (Kaligarič s sod. 2019) dokazali, da je na nivoju Slovenije v ukrepe KOPOP vključenih le 3% travišč z visoko naravovarstveno vrednostjo (VNV), je odstotek le-teh v Halozah še nižji (Slika 2). V ukrepe KOPOP so vključena le posamezna kmetijska gospodarstva (KMG). Rezultati kažejo, da je problematika večplastna. V prvi vrsti je slovenski koncept realizacije ukrepov KOPOP na nivoju travišč, v katere se lahko vključijo kakršnakoli travišča, ne glede na njihov naravovarstveni status, brez predhodnega monitoringa in ocene stanja, neuporaben za dosego ciljev, naslovljenih v ukrepih KOPOP. Posledično so subvencionirana tudi intenzivna travišča, ki pa nimajo posebne naravovarstvene vrednosti. Po drugi strani so kmetje premalo informirani, bodisi ne prepoznajo potencialnih ciljnih travišč ali pa so v neugodnem starostnem obdobju za izpolnjevanje birokratskih zahtev ukrepov KOPOP. K temu lahko dodamo še premajhna denarna nadomestila, ki pri tem igrajo eno izmed ključnih vlog. Če upoštevamo še vidik razdrobljenosti zemljišč, s čemer nekateri ne dosegajo skupne mejne površine 0,3 ha, je razumljivo, da je implementacija ukrepov KOPOP, tako v Halozah kot na območju celotne Slovenije, posledično zelo slaba.

Kakorkoli, z razvitim informacijskim sistemom v obliki spletne in mobilne aplikacije smo skušali narediti korak k izboljšanju stanja travišč na testnem območju v Halozah. Gre za sistem, ki obvešča potencialne uveljavitelje ukrepov KOPOP o tipu, kakovosti in možnosti vključitve ciljnih travišč v ustrezen pod-ukrep KOPOP. Odziv prvih uporabnikov je bil zelo pozitiven, seveda pa v največji meri o vključevanju KMG v

ukrepe KOPOP odloča denarno nadomestilo, ki je v trenutnem programu 2014-2020 bistveno premajhno. Kljub temu bi tovrstni informacijski sistemi lahko v prihajajoči shemi Evropskega kmetijskega sklada za razvoj podeželja 2021-2026 pripomogli k boljšemu udejstvovanju ukrepov KOPOP, in to ne le na področju travišč, temveč tudi na drugih naravovarstveno pomembnih habitatih.

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SOSKOPOP HALOZE: A DECISION SUPPORT SYSTEM FOR POTENTIAL CLAIMANTS OF GRASSLAND-TARGETED AGRI-ENVIRONMENT MEASURES

Summary

We summarized that the implementation of KOPOP measures in the Haloze region is particularly poor compared to the rest of Slovenia, where the situation is alarming as well. If we proved in the preliminary study (Kaligarič et al., 2019) that only 3% of grasslands with a high nature conservation value (VNV) are included in the KOPOP measures at the national level, is the percentage of them in Haloze even lower (Fig. 2). Only individual farms (KMGs) are included in the KOPOP measures. The results show that the problem is multifaceted. In the first place, the Slovenian concept of implementing KOPOP measures at the grassland level, in which any grassland can be included, regardless of its nature conservation status, without prior monitoring and assessment, is not useful for achieving the objectives addressed in the KOPOP measures. As a result, intensive grasslands without any nature conservation value are subsidized as well. On the other hand, farmers are too less informed, either failing to identify the potential target grasslands or, in an unfavorable age, to meet the bureaucratic requirements of the KOPOP measures. In addition, the monetary compensation, which plays one of the key roles in the implementation of KOPOP measures, is too small. By considering the fragmented land structure, some potential farmers even do not reach the minimum threshold area of 0,3 ha in order to participate in the KOPOP measures. Thus, it is somehow understandable that the implementation of the KOPOP measures, both in Haloze and throughout Slovenia, is consequently very poor.

However, with the developed information system in the form of web and mobile applications, we tried to make a step towards improving the state of grassland in the test area of Haloze. It is a system that informs potential KOPOP measure implementers about the type, quality and potential of including targeted grassland in the appropriate KOPOP sub-measure. The response of the first users was very positive, but of course, the KMG involvement in the KOPOP measures is correlated with the amount on the monetary compensation, which is significantly undermined in the current program 2014-2020. Nevertheless, such information systems could contribute to a better implementation of the KOPOP measures in the forthcoming scheme of the European Agricultural Fund for Rural Development 2021-2026, not only in the field of grassland, but also in other nature conservation-relevant habitats.

SPREMEMBE VINOGRADNIŠKIH POVRŠIN PO VINORODNIH OKOLIŠIH IN PODOKOLIŠIH V SLOVENIJI V OBDOBJU 2000-2019

Igor Žiberna
Dr., prof. geografije in zgodovine, izredni profesor
Oddelek za geografijo
Filozofska fakulteta
Koroška cesta 160, SI - 2000 Maribor, Slovenija
e-mail: igor.ziberna@um.si

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Izvleček

Spremembe vinogradniških površin po vinorodnih okoliših in podokoliših v Sloveniji v obdobju 2000-2019

V članku so analizirane spremembe vinogradniških površin na območju vinorodnih okolišev in podokolišev v Sloveniji v obdobju 2000-2019. Vinogradništvo je v slovenskem kmetijstvu predstavljalo pomembno panogo že od antične dobe naprej. V zadnjih desetletjih se vinogradništvo pomembo povezuje s turistično dejavnostjo. Vinogradniške površine se povsod krčijo, problem pa predstavlja tudi vedno večja starost vinogradov, saj je njihova obnova povezana z visokimi stroški. Med vinorodnimi okoliši in podokoliši v Sloveniji nastopajo velike razlike v stopnji opuščanja vinogradniških površin.

Ključne besede

spremembe vinogradniških površin, vinorodni okoliši, ekstenzifikacija, Slovenija

Abstract

Changes in wine-growing areas by wine-growing districts and subdistricts in Slovenia in the period 2000-2019

The article analyses changes in wine-growing areas in the area of wine-growing districts and subdistricts in Slovenia in the period 2000-2019. Viticulture has represented an important sector in Slovenian farms since the ancient age. In recent decades, wine-growing is associated with a tourism. Wine-growing areas are shrinking everywhere, and the problem is the growing age of vineyards, as their renovation is linked to high costs. There are significant differences between wine-growing districts and subdistricts in Slovenia in the stages of the abandonment of wine-growing areas.

Key words

Changes in wine-growing areas, wine-growing districts, extensification, Slovenia

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1. Uvod

Vinogradništvo je intenzivna, sorazmerno stara kmetijska panoga, ki se ukvarja z gojenjem vinske trte v vinogradu za pridobivanje vina, namiznega grozdja, grozdnega soka .... Vključuje tudi vinarstvo, predelavo grozdja v vino, ravnanje z njim in njegovo skladiščenje. Med vinogradniške dejavnosti spada tudi trsničarstvo (Kladnik 1999, 256). Vinogradniška dejavnost daje poseben pečat vinogradniški pokrajini in določa njeno identiteto ter življenjski slog njenega prebivalstva. Pridelava grozdja in vina pa ne pomeni le vpliva na videz kulturne pokrajine, pač pa predstavlja tudi vedno bolj pomembno gospodarsko panogo, saj se z dopolnjevanjem turistične ponudbe pogosto navezuje na turistično dejavnost (Kerma 2018). V okviru sistema geografskih disciplin se je v drugi polovici 20. stoletja celo razvila celo t.i. »geografija vina« (wine geography ali viticultural geography), ki med drugim preučuje preobrazbo pokrajine zaradi gojenja vinske trte, odnose med pokrajino in izborom sort grozdja, razvoj gojenja vinske trte in njenimi vplivi na razvoj kulturne pokrajine v preteklosti ter vplive na okolje in gospodarstvo (de Blij 1981, de Blij 1983, Dickenson 1990, Kerma 2014).

V svetu je bilo leta 2014 7,5 milijonov ha vinogradov. Kljub trendu zmanjševanja vinogradniških površin se pridelava grozdja povečuje, kar je posledica višjih hektarskih donosov (Kerma 2014). Predvsem na območjih z razgibanim gričevnatim reliefom z velikimi strminami pobočij je vinogradništvo – poleg sadjarstva - pravzaprav edina sprejemljiva oblika agrarne proizvodnje, ki po drugi strani s primernimi marketinškimi pristopi lahko pomeni tudi veliko dodano vrednost k siceršnjemu gospodarstvu te pokrajine, še posebej, če se povezuje s turistično dejavnostjo.

V Sloveniji je v Register pridelovalcev grozdja vpisanih 30000 pridelovalcev, ki gojijo vinsko trto na okoli 16000 ha vinogradov. Velik problem slovenskih vinogradov je njihova ostarelost: 41,7 % vinogradov je starejših od 25 let, četrtina pa jih je starih med 16 in 25 let. Drugo težavo predstavlja velika razdrobljenost: kar 84 % registriranih pridelovalcev obdeluje vinograde s površino manjšo od 0,5 ha, medtem ko le 1,5 % vinogradnikov obdeluje vinograde z več kot 5 ha površine (Simončič et al. 2017).

Slovenija sodi med države, v katerih se vinska trta goji na večjem odstotku kmetijske površine kot v preostalih državah članicah Evropske unije. Pri nas je namreč kar 3,3 % vseh kmetijskih zemljišč v uporabi namenjenih za pridelavo grozdja. Tradicionalno se z vinogradništvom ukvarjajo predvsem države južne Evrope (Italija, Malta, Ciper, Portugalska), in v teh državah namenjajo vinogradom nekaj več kot 4 % vseh kmetijskih zemljišč v uporabi. V največji evropski pridelovalki grozdja, Španiji, obdelujejo 941.000 hektarjev vinogradov, kar je malo manj kot 4 % njihovih kmetijskih zemljišč v uporabi (Plešivčnik 2017, 2).

V Sloveniji žal nimamo točnih podatkov o količini pridelanega vina. Na osnovi registra pridelovalcev grozdja in vina vemo, da smo v obdobju 2011-2015 pridelali 53,4 milijonov litrov vina, od tega največ v vinorodni deželi Podravje (22,7 milijonov litrov). Na osnovi statističnih podatkov je bila v istem obdobju količina pridelanega vina 73,6 milijonov litrov, medtem ko ocene, narejene na osnovi dejanske rabe tal s pomočjo letalskih posnetkov (DOF) govorijo celo o okoli 90 milijonih litrov pridelanega vina (Badovinac et al. 2017).

Evropska unija sodi med vodilne pridelovalce vin. Izstopajo predvsem Francija, Italija in Španija, skupaj z Nemčijo pa te države pridelajo slabo polovico svetovne produkcije vin. Slovenije ni med vodilnimi, se pa vseeno uvršča med prvo trideseterico držav na svetu (Kerma 2018, 79). V absolutni potrošnji vina je na prvem mestu ZDA (31 milijonov hl vina), sledijo pa Francija, Italija, Nemčija in Kitajska. Pri potrošnji vina na prebivalca je popolnoma drugačna slika: na prvem mestu sta državici Vatikan in Andora, medtem ko se Slovenija s 44,07 l na prebivalca letno nahaja na četrtem mestu (Kerma 2018, 80). Uživanje vina je torej močno zasidrano v kulturi Slovencev, žal pa se to (pre)pogosto izrojeva v alkoholizem.

Vino je tudi opazen izvozni produkt. V zadnjih 10 letih sta se povečala tako izvoz kot uvoz vina. V letu 2016 smo izvozili za skoraj 14 milijonov evrov vina, uvozili pa smo ga za skoraj 13 milijonov evrov. Vrednostno smo kar 85 % vina uvozili iz samo petih držav (Italije, Francije, Makedonije, Nemčije in Španije), izvozili pa smo ga (vrednostno) prav tolikšen delež (85 %) v 10 držav; največ vina smo izvozili v Italijo, Združene države, Avstrijo, Hrvaško in na Nizozemsko. V zadnjih 10 letih se je močno povečal izvoz vina na Kitajsko; v 2007 smo tja izvozili za 91.000 evrov vina, v 2016 za 845.000 evrov vina, v prvih sedmih mesecih letošnjega leta pa že več kot za milijon evrov vina (Plešivčnik 2017, 2).

Vinogradništvo kot gospodarska dejavnost torej po eni strani ohranja videz kulturne pokrajine, po drugi strani pa – v povezavi s turizmom – predstavlja pomembno gospodarsko dejavnost, predvsem tam, kjer so možnosti za druge oblike gospodarjenja zaradi razgibanega reliefa in velikih strmin pobočij onemogočene.

2. Metodologija dela

Vir informacij o vinogradniških površinah v našem članku so bili podatki o dejanski rabi tal, ki jih večkrat letno objavlja Ministrstvo za kmetijstvo, gozdarstvo in prehrano (Medmrežje 1). Podatke smo za območje celotne Slovenije iz vektorskega formata pretvorili v rastrski format z velikostjo piksla 5m x 5m.

Zaradi preglednejše analize smo skupine rabe tal generalizirali v 11 razredov: njive in vrtovi, vinogradi, sadovnjaki, ostali trajni nasadi, travniki, zemljišča v zaraščanju, mešana raba zemljišč, gozd, pozidana in sorodna zemljišča, ostalo in vodne površine. V nadaljevanju smo se omejili na analizo vinogradniških površin.

Po Pravilniku o seznamu geografskih označb za vina in trsnem izboru (UL RS 2007, 6732-6738) deli Slovenijo na vinorodne dežele, vinorodne okoliše, vinorodne podokoliše, vinorodne ožje okoliše, vinorodne kraje in vinorodne lege. V našem primeru smo analizirali spremembe vinogradniških površin na nivoju vinorodnih dežel, vinorodnih okolišev in vinorodnih podokolišev. Njihova delitev je razvidna v Preglednici 1, geografska lega pa na Sliki 1.

Georeferencirane vektorske podatke o vinorodnih deželah, vinorodnih okoliših in vinorodnih podokoliših so nam prijazno posredovali v Službi za register kmetijskih gospodarstev Ministrstva za kmetijstvo, gozdarstvo in prehrano. Podatke smo nato spremenili v rastrski format z resolucijo piksla 5m x 5m. Glavnino analize smo opravili z GIS programskimi paketi ArcGIS 10.5 in Idrisi TerrSet. Zaradi celovitejše analize smo Goriška Brda, ki imajo sicer status vinorodnega okoliša vključili tudi v analizo na nivoju vinorodnih podokolišev.

Preglednica 1: Delitev vinorodnih dežel, vinorodnih okolišev in vinorodnih podokolišev v Sloveniji.

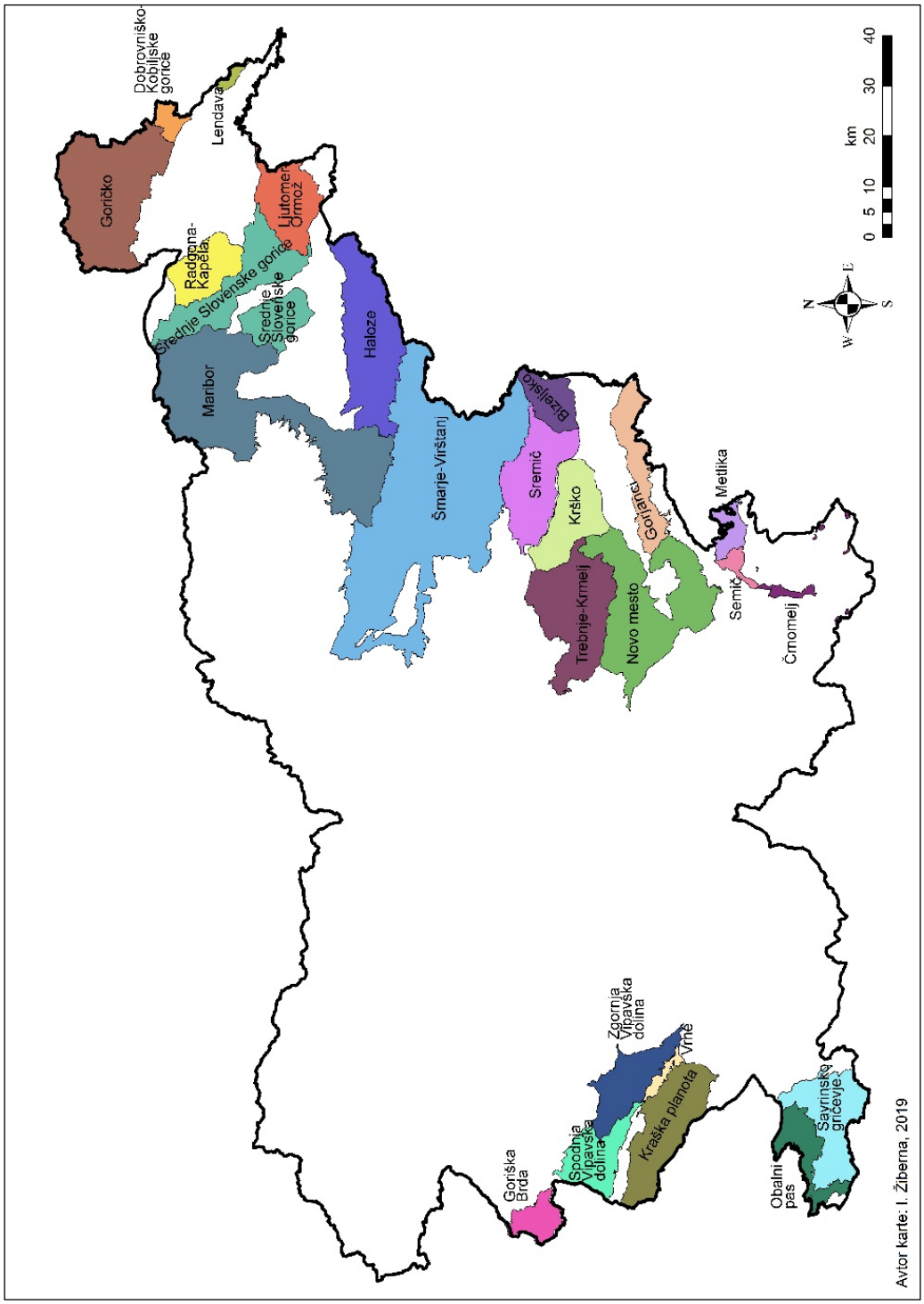
Zap.št.	Vinorodna dežela	Vinorodni okoliš	Vinorodni podokoliš
1	Podravje	Štajerska Slovenija	Maribor
2	Podravje	Štajerska Slovenija	Radgona - Kapela
3	Podravje	Štajerska Slovenija	Ljutomer - Ormož
4	Podravje	Štajerska Slovenija	Haloze
5	Podravje	Štajerska Slovenija	Srednje Slovenske gorice
6	Podravje	Štajerska Slovenija	Šmarje - Virštanj
7	Podravje	Prekmurje	Strehovsko - Dobrovniško - Kobiljske gorice
8	Podravje	Prekmurje	Lendava
9	Podravje	Prekmurje	Goričko
10	Posavje	Bizeljsko-Sremič	Bizeljsko
11	Posavje	Bizeljsko-Sremič	Sremič
12	Posavje	Dolenjska	Krško
13	Posavje	Dolenjska	Gorjanci
14	Posavje	Dolenjska	Novo mesto
15	Posavje	Dolenjska	Trebnje - Krmelj
16	Posavje	Bela krajina	Metlika
17	Posavje	Bela krajina	Semič
18	Posavje	Bela krajina	Črnomelj
19	Primorska	Vipavska dolina	Spodnja Vipavska dolina
20	Primorska	Vipavska dolina	Zgornja Vipavska dolina
21	Primorska	Kras	Vrhe
22	Primorska	Kras	Kraška planota
23	Primorska	Slovenska Istra	Šavrinsko gričevje
24	Primorska	Slovenska Istra	Priobalni pas
25	Primorska	Goriška Brda	Goriška brda

Vir: Pravilniku o seznamu geografskih označb za vina in trsnem izboru. UL RS , št. 49/07, 2007.

3. Spremembe vinogradniških površin v Sloveniji v obdobju 2000-2019

3.1 Spremembe vinogradniških površin v Sloveniji in na nivoju vinorodnih dežel ter vinorodnih okolišev

V Sloveniji so se leta 2000 njive in vrtovi nahajali na 216483,7 ha (10,7 %) površja. Vinogradi so pokrivali 25294,0 ha (1,2 %) površja, sadovnjaki 24883,0 ha (1,2 %) površja, ostali trajni nasadi pa 1181,7 ha (0,1 %) površja. Največji delež površja Slovenije se je nahajal pod gozdom (1202161,5 ha ali 59,3 %). Travniške površine so pokrivale 350548,4 ha ali 17,3 % površja, pozidane in sorodne površine pa 108207,3 ha (5,3 %) površja. Do leta 2019 so se njivske površine z vrtovi zmanjšale za 34533,5 ha ali za 1,7 odstotnih točk (OT), vinogradniške površine pa za 7010,7 ha ali za 0,3 OT. Sadjarske površine so se povečale za 7911,7 ha ali za 0,4 OT, ostali trajni nasadi pa za 1670,0 ha ali za 0,1 OT. Največje povečanje smo beležili pri gozdnih površinah in sicer za 28740,9 ha ali za 1,4 OT ter pri zemljiščih v zaraščanju (za 12795,0 ha ali za 0,6 OT). Pozidane in sorodne površine so se povečale za 4908,8 ha ali za 0,2 OT. Povečale so se tudi travniške površine in sicer za 2487,7 ha ali za 0,1 OT (Preglednica 2).



Slika 1: Pregledna karta vinorodnih podokolišev.
Vir: Služba za register kmetijskih gospodarstev, 2019.

Preglednica 2: Raba tal v Sloveniji v letih 2000 in 2019.

Raba tal	2000 (ha)	2000 (%)	2019 (ha)	2019 (%)	Razlika (ha)	Razlika (OT)	Indeks (2000=100)
Njive in vrtovi	216483.7	10.7	181950.2	9.0	-34533.5	-1.7	84.0
Vinogradi	25294.0	1.2	18283.3	0.9	-7010.7	-0.3	72.3
Sadovnjaki	24883.0	1.2	32794.7	1.6	7911.7	0.4	131.8
Ostali trajni nasadi	1181.7	0.1	2851.7	0.1	1670.0	0.1	241.3
Travniki	350548.4	17.3	353036.1	17.4	2487.7	0.1	100.7
Zemljišča v zaraščanju	25234.6	1.2	38029.6	1.9	12795.0	0.6	150.7
Mešana raba zemljišč	18945.9	0.9	10710.1	0.5	-8235.8	-0.4	56.5
Gozd	1202161.5	59.3	1230902.4	60.7	28740.9	1.4	102.4
Pozidane in sorodne površine	108207.3	5.3	113116.1	5.6	4908.8	0.2	104.5
Ostalo	40805.2	2.0	31877.4	1.6	-8927.8	-0.4	78.1
Vodne površine	14056.4	0.7	14250.1	0.7	193.7	0.0	101.4
Skupaj	2027801.6	100.0	2027801.6	100.0	0.0	0.0	100.0

Vir: MKGP, 2019; Lastni izračuni, 2019.

Če med obdelovalne površine štejemo njive in vrtove, vinograde, sadovnjake in ostale trajne nasade, lahko ugotovimo, da so se te v obdobju 2000 – 2019 zmanjšale z 267842,4 ha (13,2 % površja Slovenije) na 235879,9 ha (11,6 % površja Slovenije). Vinogradniške površine so leta 2000 predstavljale 9,4 % vseh obdelovalnih površin, do leta 2019 pa se je ta delež znižal na 7,8 %.

Vinogradniške površine na območij treh vinorodnih dežel Podravja, Posavja in Primorske so leta 2000 skupaj pokrivale 24495,6 ha površja. Od tega se je kar 45,9 % vinogradniških površin nahajalo na območju vinorodne dežele Podravje, 21,9 % v deželi Posavju, 32,2 % pa v vinorodni deželi Primorska. Do leta 2019 so se vinogradniške površine v vseh vinorodnih deželah zmanjšale: v Podravju za 3660,4 ha, v Posavju za 1968,7 ha, v vinorodni deželi Primorska pa za 978,5 ha. Struktura vinogradniških po vinorodnih deželah je leta 2019 bila naslednja: v Podravju se je nahajalo 42,4 % vseh vinogradov, v Posavju 18,9 %, na Primorskem pa 38,7 %. Absolutno največje zmanjšanje vinogradniških površin smo beležili v Podravju (za 3660,4 ha), medtem ko so se v Posavju te zmanjšale za 1968,7 ha, na Primorskem pa le za 978,5 ha.

Med vinorodnimi okoliši se je leta 2000 največ vinogradniških površin nahajalo na območju Štajerske Slovenije (10099,4 ha ali 41,2 % vseh vinogradniških površin po vinorodnih okoliših), sledili pa so vinorodni okoliši Vipavska dolina (2994,6 ha ali 12,2 %), Dolenjska 2961,8 ha ali 12,1 %) in Slovenska Istra (2511,8 ha ali 10,3 %) (Preglednica 3). Do leta 2019 so se vinogradniške površine v vseh vinorodnih okoliših zmanjšale, najbolj pa na območju vinorodnega okoliša Štajerska Slovenija (za 3178,5 ha), okoliša Dolenjska (za 946,6 ha), okoliša Bizeljsko-Sremič (za 721,5 ha) in okoliša Vipavska dolina (za 551,9 ha). V skupni strukturi so se deleži vinogradniških površin dvignili v vseh primorskih vinorodnih okoliših, najbolj pa v Goriških Brdih in Slovenski Istri, najbolj pa je padel na območju vinorodnega okoliša Štajerska Slovenija.

Preglednica 3: Vinogradniške površine po vinorodnih okoliših v Sloveniji v letih 2000 in 2019.

Vinorodni okoliš	Površina 2000 (ha)	Površina 2000 (%)	Površina 2019 (ha)	Površina 2019 (%)	Razlika površin (ha)	Razlika površin (OT)	Indeks (2000=100)
Štajerska Slovenija	10099.4	41.2	6921.0	38.7	-3178.5	-2.5	68.5
Prekmurje	1142.0	4.7	660.1	3.7	-481.9	-1.0	57.8
Bizeljsko-Sremič	1638.9	6.7	917.4	5.1	-721.5	-1.6	56.0
Dolenjska	2961.8	12.1	2015.2	11.3	-946.6	-0.8	68.0
Bela krajina	754.2	3.1	453.6	2.5	-300.6	-0.5	60.1
Vipavska dolina	2994.6	12.2	2442.7	13.7	-551.9	1.4	81.6
Kras	710.0	2.9	672.9	3.8	-37.0	0.9	94.8
Slovenska Istra	2511.8	10.3	2144.4	12.0	-367.4	1.7	85.4
Goriška Brda	1683.1	6.9	1660.9	9.3	-22.2	2.4	98.7
Vsota	24495.6	100.0	17888.1	100.0	-6607.6	0.0	73.0

Vir: Lastni izračuni, 2019.

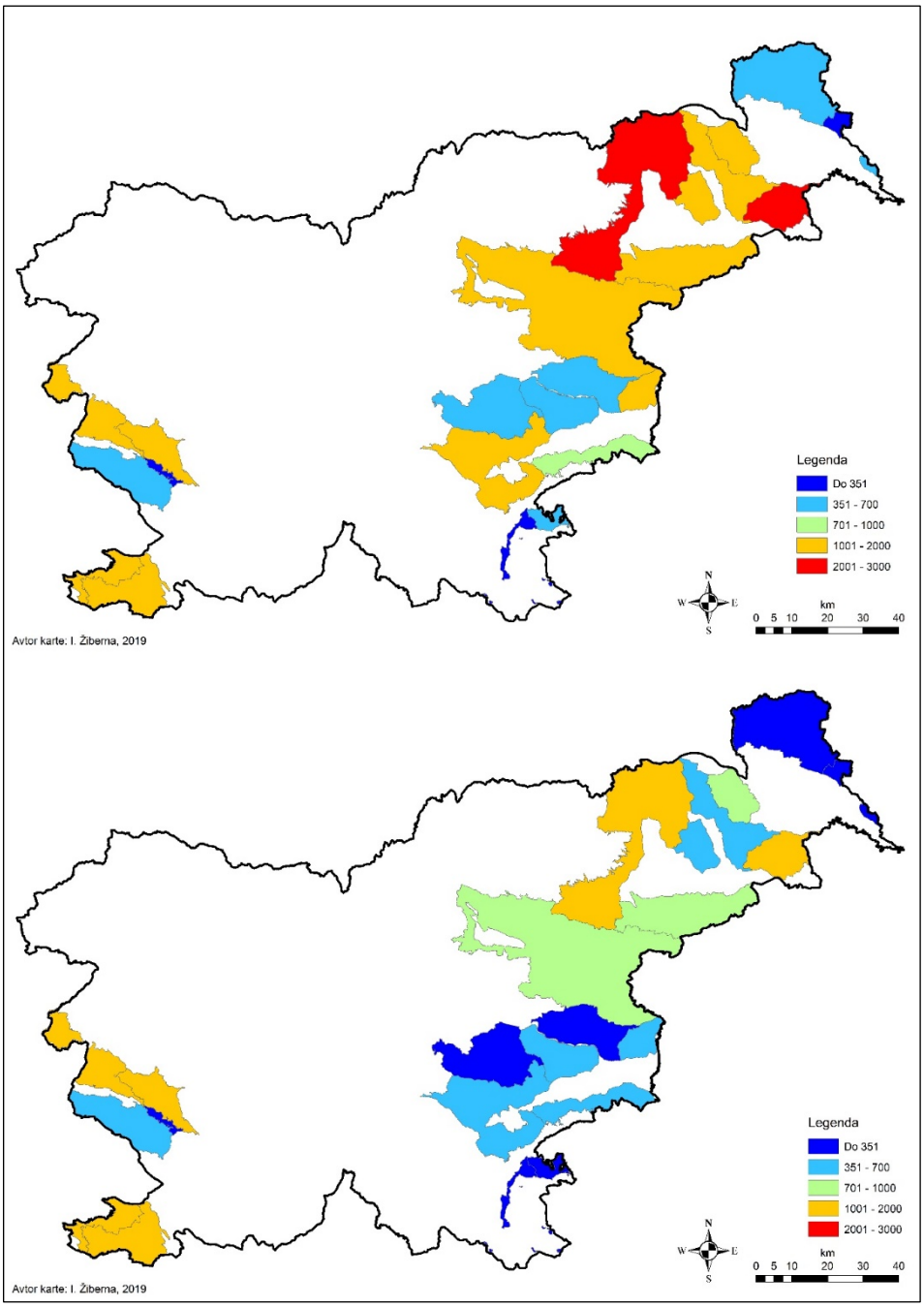
3.2 Spremembe vinogradniških površin na nivoju vinorodnih podokolišev

Pravilnik o seznamu geografskih označb za vina in trsnem izboru (UL RS 2007, 6732-6738) opredeljuje 22 vinorodnih podokolišev. Zaradi celovitejše obravnave smo v analizo na nivoju podokolišev dodali še vinorodni okoliš Goriška Brda, ki sicer nimajo status vinorodnega podokoliša.

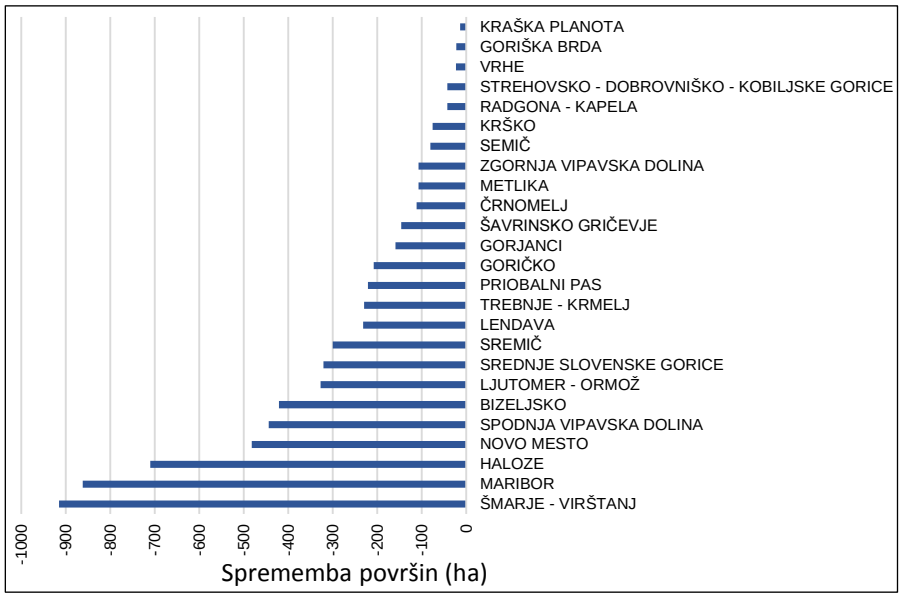
Leta 2000 se je daleč največ vinogradniških površin nahajalo na območju podokoliša Maribor (2622,6 ha ali 10,7 % vinogradniških površin v vseh podokoliših). Vinogradi so v tem podokolišu pokrivali 3,7 % celotnega površja. Veliko vinogradniških površin se je nahajalo še na območju podokoliša Ljutomer-Ormož (2027,6 ha ali 8,3 % vinogradniških površin v vseh podokoliših), Šmarje Virštajn (1782,8 ha ali 7,3 %), Goriška Brda (1683,1 ha ali 6,9 %), Haloze (1637,8 ha ali 6,7 %), Spodnja Vipavska dolina (1501, 6 ha ali 6,1 %) in Zgornja Vipavska dolina (1493,0 ha ali 6,1 %). Vinogradniške površine so pokrivale najvišje deleže površja vinorodnega podokoliša v podokolišu Lendava (29,1 %) in Goriška Brda (27,4 %). Vinogradniške površine so se do leta 2019 v vseh vinorodnih podokoliših zmanjšale. V ospredju sta še vedno vinorodna podokoliša Maribor (1760,6 ha ali 9,8 %), Ljutomer-Ormož 1700,4 ha ali 9,5 %), Goriška Brda (1660,9 ha ali 9,3 %), Zgornja Vipavska dolina 1385,4 ha ali 7,7 %) in Priobalni pas (1135,8 ha ali 6,3 %) (Slika 2). Vinogradniške površine so pokrivale najvišji delež površja podokoliša v podokolišu Goriška Brda (27,1 %) in podokolišu Lendava (15,3 %). Po površinah z umikom vinogradniških površin po vinorodnih okoliših izstopa vinorodni podokoliš Šmarje –Virštanj, kjer so se te zmanjšale za 915,2 ha. Zelo visoke stopnje zmanjšanja vinogradniških površin je mogoče zaznati še v podokoliših Maribor (zmanjšanje za 862,0 ha), Haloze (710,2 ha), Novo mesto (482,4 ha), Spodnja Vipavska dolina (444,3 ha) in Bizeljsko (421,0 ha). Vinogradniške površine so se najmanj zmanjšale v podokolišu Kraška planota (za 13,6 ha) in Goriška Brda (za 22,2 ha) (Slika 3). V relativnem smislu so se vinogradniške površine najbolj zmanjšale v podokoliših Lendava (za 13,7 odstotnih točk ali OT), Črnomelj (za 5,3 OT), Bizeljsko (za 4,5 OT), Spodnja Vipavska dolina (za 3,5 OT) in Semič (za 3,5 OT).

Na območju vseh vinorodnih podokolišev v Sloveniji je bilo največ vinogradniških površin opuščenih na račun spremembe v travniške površine (4989,1 ha ali 45,3 % vseh opuščenih vinogradniških površin). 1568,9 ha ali 14,2 % vinogradniških površin iz leta 2000 je bilo opuščenih zaradi spremembe v zemljišča v zaraščanju, 1521,7 ha (13,8 %) pa zaradi sprememb v sadovnjake. 1176,7 ha (10,7 %) vinogradov je bilo spremenjenih v njive in vrtove, 620,4 ha (5,6 %) v pozidane in sorodne površine, 585,5 ha (5,3 %) v ostale trajne nasade, 539,7 ha (4,9 %) pa v gozd. V ekstenzivne oblike rabe tal (travniki, zemljišča v zaraščanju, gozd), je bilo v obravnavanem dvajsetletnem obdobju spremenjenih 7097,8 ha ali 64,4 % vseh opuščenih vinogradniških površin. Največ opuščenih vinogradniških površin je bilo spremenjenih v travnike na območju vinorodnih podokolišev Maribor (651,1 ha ali 51,9 % vseh opuščenih vinogradniških površin), Šmarje-Virštanj (633,1 ha ali 58,7 %) in Haloze (417,4 ha ali 51,9 %) (Slika 4). V zemljišča v zaraščanju je bilo največ opuščenih vinogradov spremenjenih v vinorodnih podokoliših Spodnja Vipavska dolina (202,8 ha ali 27,6 %), Haloze (195,8 ha ali 24,3 %) in Maribor (188,0 ha ali 15,0 %). V relativnem smislu je ta delež najvišji v podokoliših Spodnja Vipavska dolina (27,6 %), Haloze (24,3 %), Vrhe (23,3 %), Šavrinsko gričevje (19,0 %) in Lendava (18,9 %) (Slika 5). Največ pozidanih in sorodnih površin je bilo leta 2019 na nekdanjih vinogradniških površinah na območju vinorodnega podokoliša Priobalni pas (74,0 ha ali 13,4 %), sledili pa so podokoliši Maribor (60,6 ha ali 4,8 %), Novo mesto (49,6 ha ali 8,5 %) in Šmarje-Virštanj (45,7 ha ali 4,2 %). V vseh vinorodnih podokoliših je bilo v obdobju 2000-2019 v neobdelovalne površine spremenjenih 7741,2 ha opuščenih vinogradov (70,2 %). Najvišji delež opuščenih vinogradov, spremenjenih v neobdelovalne površine je bilo zaznati na območju vinorodnega podokoliša Vrhe (87,9 %), vendar pa v absolutnem merilu to pomeni le 32,0 ha. Bolj porazna je slika v Halozah, kjer ta delež znaša 86,2 ha, v absolutnem smislu pa kar 694,2 ha. Stanje je slabše le še v podokoliših Maribor (946,0 ha) in Šmarje-Virštanj (812,3 ha). Zanimiv je podokoliš Priobalni pas, za katerega smo sicer omenili, da je veliko opuščenih vinogradniških površin bilo spremenjenih v pozidane in sorodne površine, vendar pa je v tem podokolišu bila večina opuščenih vinogradov (311,8 ha ali 56,4 %) spremenjena v ostale oblike obdelovalnih površin, pri čemer je ta podokoliš edini, pri katerem so večino opuščenih vinogradov zamenjale obdelovalne površine. Največ opuščenih vinogradov je bilo spremenjenih v ostale trajne nasade (131,8 ha ali 23,9 %), njive in vrtove (110,0 ha ali 19,9 %) ter sadovnjake (70,0 ha ali 12,7 %). Ob sočasni potrebi po širjenju pozidanih površin ob slovenski obali lahko v prihodnje na tem območju pričakujemo nastajanje konfliktnih območij.

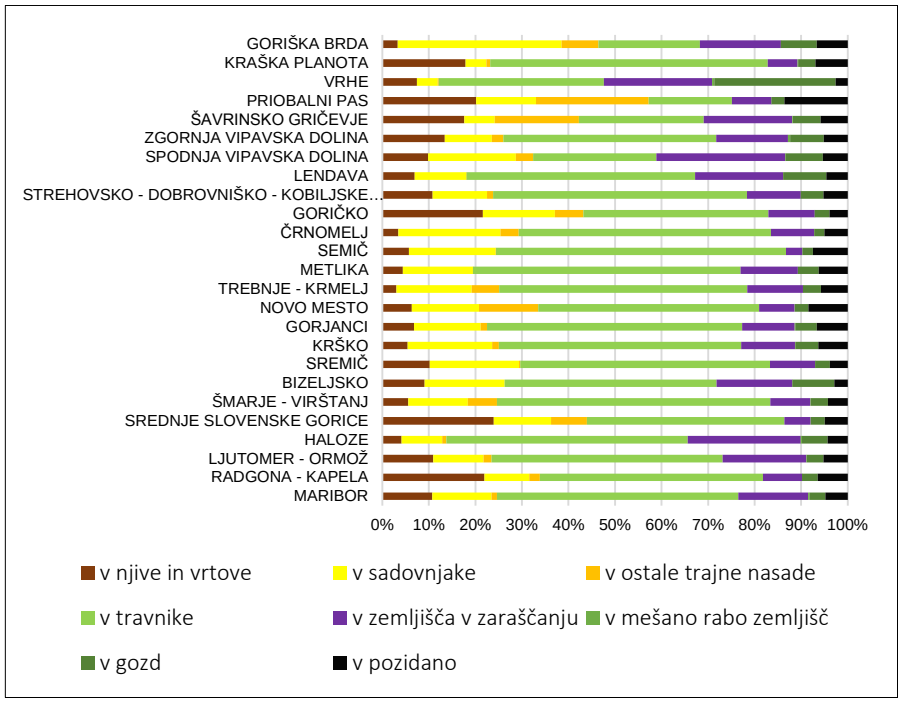
Spremembe v vinogradniških površinah pa niso bile le v smeri opuščanja, pač pa je v obravnavanem dvajsetletnem obdobju nastalo tudi veliko novih vinogradniških površin. Največ neto novih vinogradniških površin je nastalo v podokoliših Zgornja Vipavska dolina (546,9 ha), Šavrinsko gričevje (428,1 ha), Goriška Brda (394,0 ha), Maribor (393,1 ha) in Priobalni pas (339,9 ha). Najmanj novih vinogradov se je pojavilo v podokoliših Strehovsko-Dobrovniško-Kobiljske gorice (8,5 ha), Črnomelj (9,8 ha), Semič (11,8 ha) in Lendava (12,6 ha). Bolj realna je analiza razmerja med opuščenimi in novonastalimi vinogradniškimi površinami. To je najvišje v podokolišu Lendava (19,4, kar pomeni 19,4 ha opuščenih vinogradov na en hektar novonastalih vinogradniških površin), Črnomelj (12,4), Haloze (8,5), Semič (7,8), Šmarje-Virštanj (6,6) in Sremič (6,3) (Slika 6).



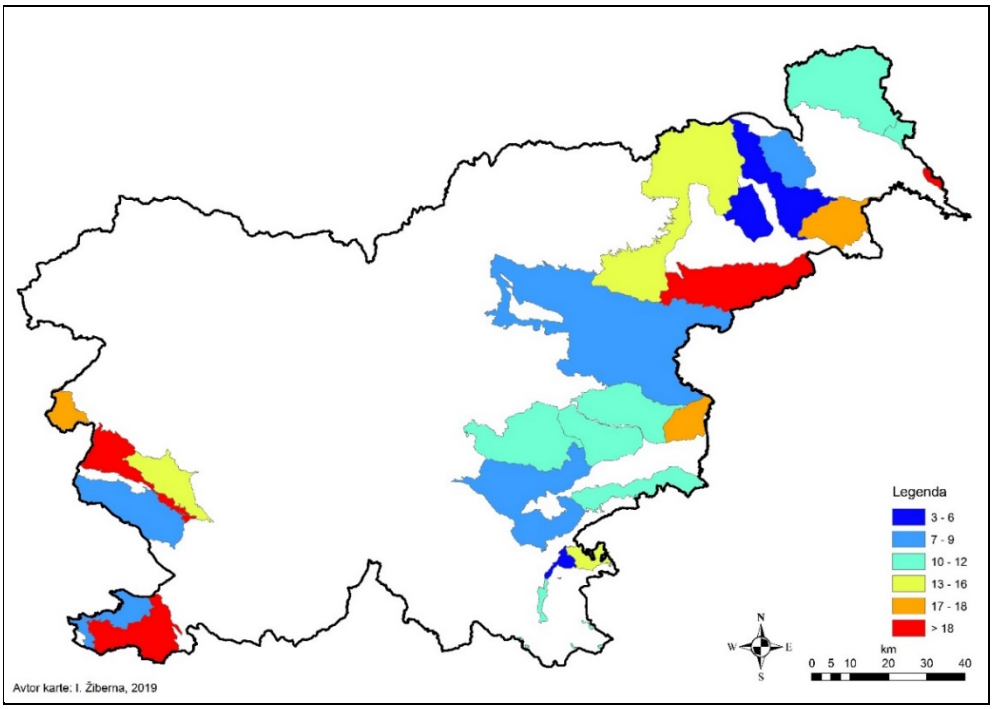
Slika 2: Vinogradniške površine leta 2000 (zgoraj) in leta 2019 (spodaj) po vinorodnih podokoliših (v ha).
Vir: MKGP, 2019; Lastni izračuni, 2019.



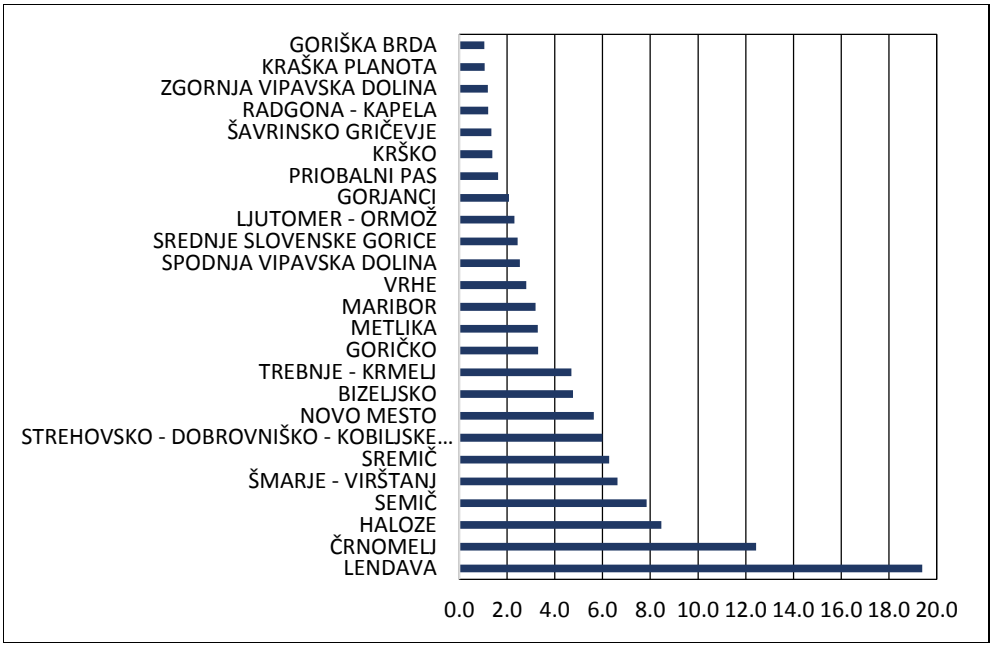
Slika 3: Zmanjšanje vinogradniških površin po vinorodnih podokoliših v obdobju 2000-2019.
Vir: MKGP, 2019; Lastni izračuni, 2019.



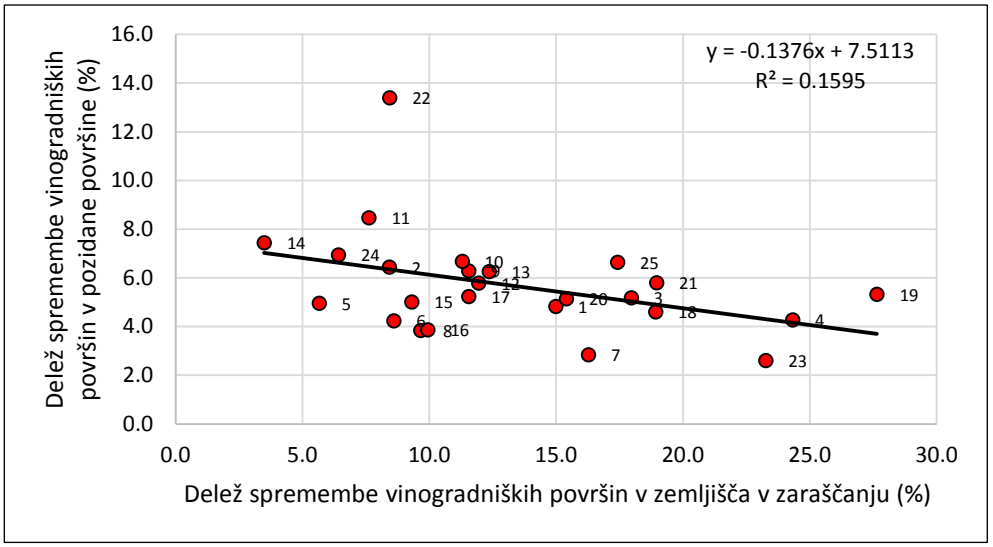
Slika 4: Smeri sprememb vinogradniških površin v obdobju 2000-2019.
Vir: Lastni izračuni, 2019.



Slika 5: Delež opuščenih vinogradniških površin, ki se danes zaraščajo (v %).
Vir: MKGP, 2019; Lastni izračuni, 2019.



Slika 6: Razmerje med opuščenimi in novo nastalimi vinogradniškimi površinami v obdobju 2000-2019.
Vir: Lastni izračuni, 2019.



Slika 7: Povezava med deležem spremembe vinogradniških površin v zemljišča v zaraščanju in deležem spremembe vinogradniških površin v pozidane in sorodne površine.
Vir: Lastni izračuni, 2019.
Opomba: Oznake vinorodnih podokoliševso njihove šifre, ki so razvidne v Preglednici 1.

Izpovedne so tudi analize kombinacij različnih smeri sprememb rabe tal po vinorodnih podokoliših. Povezava med deležem novonastalih zemljiš v zaraščanju in novonastalih pozidanih in sorodnih površin kaže šibko negativno korelacijo. Le 16 % razlik v novonastalih pozidanih površinah lahko pojasnimo s spremembami v zemljiščih v zaraščanju. Kljub temu pa lahko izpostavimo nekaj skrajnih primerov. V podokoliših Vrhe, Haloze in Spodnja Vipavska dolina se kaže visoka stopnja zaraščanja ob relativno nizki stopnji sprememb v pozidane površine. Po drugi strani pa se v podokolišu Priobalni pas in v nekoliko manjši meri v podokolišu Novo mesto kaže visoka stopnja sprememb v pozidane površine ob nizki stopnji sprememb v zemljišča v zaraščanju (Slika 7).

Podobno kot pri splošnih trendih sprememb rabe tal (Žiberna 2018) lahko tudi pri vinogradniških površinah opazimo nekakšno viličenje: v kmetijsko vitalnejših podokoliših se vinogradniške površine spreminjajo v obdelovalne površine (Goriška Brda, Priobalni pas, Zgornja Vipavska dolina), v drugih pa prevladujejo spremembe vinogradniških površin v neobdelovalne površine, med katerimi imajo na žalost levji delež zemljišča v zaraščanju in gozdne površine. Absolutno največ opuščenih vinogradniških površin je bilo spremenjenih v zemljišča v zaraščanju ali gozdne površine v podokoliših Spodnja Vipavska dolina (261,7 ha ali 35,7 % vseh opuščenih vinogradniških površin), Haloze (240,1 ha ali 29,8 %) in Maribor (230,6 ha ali 18,4 %).

4. Zaključek

Vinogradništvo je stara kmetijska panoga, ki se je k nam razširila iz Sredozemlja, njeni glavni pospeševalci pa so bili Rimljani (Bračič 1998, 257). Vinogradniški tip

kmetijskega sistema pri nas srečamo najpogosteje v obsredozemskem in obpanonskem območju (Vrišer 1998, 388). Pridelava grozdja in vina ne pomeni le vpliva na videz kulturne pokrajine, pač pa predstavlja tudi vedno bolj pomembno gospodarsko panogo, saj se z dopolnjevanjem turistične ponudbe pogosto navezuje na turistično dejavnost. Kljub ugodnim podnebnim in drugim naravnim pogojem za vinogradništvo (Belec 1973, 141), pa se delež vinogradniških površin v Sloveniji zmanjšuje. Proces, ki je sicer prisoten že od začetka 20. stoletja, se v zadnjih desetletjih le še intenzivira. Vinogradi so leta 2000 pokrivali 25294,0 ha (1,2 %) slovenskega površja, do leta 2019 pa so se vinogradniške površine zmanjšale pa za 7010,7 ha ali za 0,3 OT. Vinogradniške površine so leta 2000 predstavljale 9,4 % vseh obdelovalnih površin, do leta 2019 pa se je ta delež znižal na 7,8 %.

Vinogradniške površine na območij treh vinorodnih dežel Podravja, Posavja in Primorske so leta 2000 skupaj pokrivale 24495,6 ha površja. Od tega se je kar 45,9 % vinogradniških površin nahajalo na območju vinorodne dežele Podravje, 21,9 % v deželi Posavju, 32,2 % pa v vinorodni deželi Primorska. Do leta 2019 so se vinogradniške površine v vseh vinorodnih deželah zmanjšale: v Podravju za 3660,4 ha, v Posavju za 1968,7 ha, v vinorodni deželi Primorska pa za 978,5 ha. Struktura vinogradniških površin po vinorodnih deželah je leta 2019 bila naslednja: v Podravju se je nahajalo 42,4 % vseh vinogradov, v Posavju 18,9 %, na Primorskem pa 38,7 %. Absolutno največje zmanjšanje vinogradniških površin smo beležili v Podravju (za 3660,4 ha), medtem ko so se v Posavju te zmanjšale za 1968,7 ha, na Primorskem pa le za 978,5 ha.

Leta 2000 se je daleč največ vinogradniških površin nahajalo na območju podokoliša Maribor (2622,6 ha ali 10,7 % vinogradniških površin v vseh podokoliših). Vinogradi so v tem podokolišu pokrivali 3,7 % celotnega površja. Veliko vinogradniških površin se je nahajalo še na območju podokoliša Ljutomer-Ormož (2027,6 ha ali 8,3 % vinogradniških površin v vseh podokoliših), Šmarje Virštajn (1782,8 ha ali 7,3 %), Goriška Brda (1683,1 ha ali 6,9 %), Haloze (1637,8 ha ali 6,7 %), Spodnja Vipavska dolina (1501, 6 ha ali 6,1 %) in Zgornja Vipavska dolina (1493,0 ha ali 6,1 %). Vinogradniške površine so pokrivale najvišje deleže površja vinorodnega podokoliša v podokolišu Lendava (29,1 %) in Goriška Brda (27,4 %). Vinogradniške površine so se do leta 2019 v vseh vinorodnih podokoliših zmanjšale. V ospredju sta še vedno vinorodna podokoliša Maribor (1760,6 ha ali 9,8 %), Ljutomer-Ormož 1700,4 ha ali 9,5 %), Goriška Brda (1660,9 ha ali 9,3 %), Zgornja Vipavska dolina 1385,4 ha ali 7,7 %) in Priobalni pas (1135,8 ha ali 6,3 %). Vinogradniške površine so pokrivale najvišji delež površja podokoliša v podokolišu Goriška Brda (27,1 %) in podokolišu Lendava (15,3 %). Po površinah z umikom vinogradniških površin po vinorodnih okoliših izstopa vinorodni podokoliš Šmarje –Virštanj, kjer so se te zmanjšale za 915,2 ha. Zelo visoke stopnje zmanjšanja vinogradniških površin je mogoče zaznati še v podokoliših Maribor (zmanjšanje za 862,0 ha), Haloze (710,2 ha), Novo mesto (482,4 ha), Spodnja Vipavska dolina (444,3 ha) in Bizeljsko (421,0 ha). Vinogradniške površine so se najmanj zmanjšale v podokolišu Kraška planota (za 13,6 ha) in Goriška Brda (za 22,2 ha). V relativnem smislu so se vinogradniške površine najbolj zmanjšale v podokoliših Lendava (za 13,7 odstotnih točk ali OT), Črnomelj (za 5,3 OT), Bizeljsko (za 4,5 OT), Spodnja Vipavska dolina (za 3,5 OT) in Semič (za 3,5 OT).

Na območju vseh vinorodnih podokolišev v Sloveniji je bilo največ vinogradniških površin opuščenih na račun spremembe v travniške površine (4989,1 ha ali 45,3 % vseh opuščenih vinogradniških površin). 1568,9 ha ali 14,2 % vinogradniških površin iz leta 2000 je bilo opuščenih zaradi spremembe v zemljišča v zaraščanju, 1521,7 ha

(13,8 %) pa zaradi sprememb v sadovnjake. V vseh vinorodnih podokoliših je bilo v obdobju 2000-2019 v neobdelovalne površine spremenjenih 7741,2 ha opuščenih vinogradov (70,2 %). Najvišji delež opuščenih vinogradov, spremenjenih v neobdelovalne površine je bilo zaznati na območju vinorodnega podokoliša Vrhe (87,9 %), vendar pa v absolutnem merilu to pomeni le 32,0 ha. Bolj porazna je slika v Halozah, kjer ta delež znaša 86,2 ha, v absolutnem smislu pa kar 694,2 ha.

Eno od spoznanj analize vodi v zaključek, da naravne danosti za vinogradništvo v Sloveniji postajajo čedalje slabše izkoriščene, še posebej pa skrbi dejstvo, da se vinogradniške površine zaraščajo ali spreminjajo v gozdne površine. Ob dejstvu, da bi vinogradništvo v povezavi s turizmom lahko posameznim vinorodnim podokolišem prinašalo večji prihodek, so omenjeni procesi nerazumljivi. Trajne kulture seveda zahtevajo večji finančni vložek, ki se ne obrestuje takoj, pa vendar se ob zgornjih zaključkih ne moremo znebiti občutka, da za bolj velikopotezne spremembe primanjkuje volje tako na državnem kot lokalnem nivoju.

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CHANGES IN WINE-GROWING AREAS BY WINE-GROWING DISTRICTS AND SUBDISTRICTS IN SLOVENIA IN THE PERIOD 2000-2019

Summary

Viticulture is an old agricultural industry that has spread to us from the Mediterranean and its main accelerators were Romans. The wine-growing type of agricultural system we meet most often in the subediterranean and subpanonian area. The production of grapes and wine does not only affect the appearance of the cultural landscape, but it also represents an increasingly important economic sector, as it often refers to the tourism activity by supplementing the tourist offer. Despite favourable climatic and other natural conditions for viticulture, the share of wine-growing areas in Slovenia is decreasing. A process has been present since the beginning of the 20th century. In recent decades, it has only intensified. In 2000, vineyards covered 25294,0 ha (1,2%) The Slovenian surface and by 2019 the wine-growing areas decreased by 7010,7 ha or by 0,3 percentage point. In 2000, wine-growing areas accounted for 9,4% of all arable land and by 2019 the share decreased to 7,8%.

The vineyard areas in the wine regions of the Podravje, Posavje and Primorska regions in 2000 covered a total of 24495,6 ha. Of this, 45,9% of wine-growing areas were located in the area of the wine-growing region of Podravje, 21,9% in the land of Posavje, and 32,2% in the wine-growing land of Primorska. By 2019, winegrowing areas in all wine-growing regions had decreased: in the Podravje region by 3660,4 ha, in the Posavje region by 1968,7 ha, and in the wine-growing region of Primorska by 978,5 ha. The structure of wine-growing areas in wine-growing regions was as follows in 2019: 42,4% of all vineyards were located in Podravje, 18,9% in Posavje and 38,7% in Primorska. The absolute largest decrease in wine-growing areas was recorded in the Podravje region (by 3660,4 ha), while in the Posavje region it decreased by 1968,7 ha and in the Primorska region by only 978,5 ha.

In 2000, by far the largest number of wine-growing areas was located in the Maribor sub-district (2622,6 ha or 10,7% of the wine-growing areas in all suburbs). Vineyards in this area covered 3,7% of the total area. Many vineyard areas were also located in the area of Ljutomer-Ormož sub-district (2027,6 ha or 8,3% of wine-growing areas in all sub-districts), Šmarje Virštajn (1782,8 ha or 7,3%), Goriška Brda (1683,1 ha or 6,9%), Haloze (1637,8 ha or 6,7%), Lower Vipava Valley (1501,6 ha or 6,1%) and Upper Vipava Valley (1493,0 ha or 6,1%). The wine-growing areas covered the highest proportions of the wine-growing area in the Lendava sub-district (29,1%) and Goriška Brda (27,4%). By 2019, vineyards have declined in all winegrowing districts. The winegrowing districts of Maribor (1760,6 ha or 9,8%), Ljutomer-Ormož (1700,4 ha or 9,5%), Goriška Brda (1660,9 ha or 9,3%), Zgornja Vipavska remain in the forefront the valley 1385,4 ha or 7,7%) and the coastal zone (1135,8 ha or 6,3%). The vineyard areas covered the highest share of the area in the Goriška Brda sub-district (27,1%) and the Lendava sub-district (15,3%). The winegrowing district Šmarje - Virštanj stands out in areas with the withdrawal of vineyard areas, where they have decreased by 915,2 ha. Very high levels of decrease in vineyard area can be seen in the Maribor suburbs (decrease by 862,0 ha), Haloze (710,2 ha), Novo mesto (482,4 ha), Lower Vipava valley (444,3 ha) and Bizeljsko (421,0 ha). The vineyard areas decreased the least in the Karst Plateau area (by 13,6 ha) and Goriška Brda (by 22,2 ha). In relative terms, the wine-growing areas decreased the most in the Lendava suburbs (by 13,7 percentage points), Črnomelj (by 5,3), Bizeljsko (by 4,5), the Lower Vipava Valley (by 3,5) and Semic (by 3,5).

In the area of all winegrowing districts in Slovenia, the majority of winegrowing areas were abandoned due to the change to grassland (4989,1 ha or 45,3% of all abandoned winegrowing areas). 1568,9 ha or 14,2% of the 2000 vineyards were abandoned due to changes in overgrown land and 1521,7 ha (13,8%) due to changes to orchards. In all wine-growing districts, 7741,2 ha of abandoned vineyards (70,2%) were transformed into non-cultivated areas in the 2000-2019 period. The highest proportion of abandoned vineyards converted to arable land was detected in the area of the Vrha wine-growing district (87,9%), but in absolute terms this represents only 32,0 ha. More striking is the picture in Haloze, where this proportion amounts to 86,2 ha and in absolute terms to as much as 694,2 ha.

One of the findings of the analysis leads to the conclusion that the natural resources for viticulture in Slovenia are becoming increasingly under-utilized, especially worrying about the fact that the vineyard areas are overgrown or changed into forested areas. The fact that viticulture in connection with tourism could generate greater revenue for individual winegrowing districts makes these processes incomprehensible. Sustainable cultures, of course, require a greater financial contribution, which does not pay off immediately, but the above conclusions do not allow us to get rid of the feeling that there is a lack of will at the national and local levels for more ambitious changes.

EXPLOITATION AND USE OF NON-METAL MINERAL RESOURCES OF THE TUZLA CANTON

Senada Nezirović
Dr., associate professor
Department of Geography
Faculty of Science
Zmaja od Bosne 33-35,
71 000 Sarajevo,
Bosnia and Herzegovina
e-mail: senadanezirovic@yahoo.com

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Abstract
Exploitation and use of non-metal mineral resources of the Tuzla Canton
This paper analyzes the spatial distribution of potential non-metallic mineral resources in the area of Tuzla Canton. Available non-metallic mineral resources of the Tuzla Canton are classified into three groups: energy (coal), industrial processing (rock salt, limestone, quartz sand, brick clay and magnesite) and construction materials (gravel and sand). Identification of non-metallic mineral resources of Tuzla Canton described and enumerated all the resources by their importance and use, giving a brief analysis of their economic exploitation. Based on field research, current knowledge, collection of various information and documents, the author tries to point out in the paper the economic importance of non-metallic mineral resources and their participation in the economic development of the Tuzla Canton.

Key words
Tuzla Canton, non-metallic mineral resources, exploitation.

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1. Introduction

Tuzla Canton is located in the northeastern part of Bosnia and Herzegovina and its one of ten cantons in the Federation of Bosnia and Herzegovina. Tuzla Canton has an area of 2,652 km² (10.10% of the Federation of Bosnia and Herzegovina and 5.17% of Bosnia and Herzegovina) with 477,278 inhabitants (Agency for Statistics of Bosnia and Herzegovina, Census 2013). It has a favorable geo-traffic position and is connected to the Pannonian Plain and the Adriatic coast. There are 13 municipalities in the Tuzla Canton: Banovići, Doboj-Istok, Čelić, Gradačac, Gračanica, Kalesija, Kladanj, Lukavac, Srebrenik, Sapna, Tuzla, Teočak and Živinice (Spatial Plan for the Tuzla Canton 2005-2025). Tuzla canton disposes of non-metallic mineral resources that formed the backbone of the economic development of this region, which is primarily thought of as coal as the primary source of lean energy production and stone salt on the basis of which the chemical industry developed.

2. Materials and Methods

The exploration of the resource base in this work required an analysis of the spatial distribution of non-metallic mineral resources in the Tuzla Canton. The analysis of the natural resources utilization of the Tuzla Canton was done according to the sustainable development indicators. The selection of indicators is based on the comparison of reserves, production, consumption and needs, on the basis of which indicators were obtained on the use and protection of mineral non-metallic resources of the area. The description gives an overview of the relationship between these indicators for particular issues, their limitations, availability and usability. In addition to each of the segments covered in this paper, thematic cartographic contributions are presented. In addition to cartographic, other graphical and tabular indicators are included in the paper. The methodology of work required the application of a combined qualitative and quantitative comparative method, analysis and synthesis methods. The complexity of the research required the use of data from various sources, in addition to professional literature, statistical indicators, planning and strategic documents of municipalities and business enterprises of the Tuzla Canton were used. The collected material and data are according to their structure, processed by modern geographical methods including GIS technology for presentation of the geographical reality of the Canton.

3. Non-metallic mineral resources of Tuzla Canton

The non-metallic mineral resources present in the area of Tuzla Canton in this paper are classified into three groups: energy (coal), industrial-processing non-metallic resources (rock salt, limestone, quartz sand, brick clay and magnesite) and construction materials (gravel and sand) (Spatial plan for the area of Tuzla Canton for the period 2005-2025).

3.1. Energy resources

The main energy resource is coal. There are three types of coal in this area: lignite, brown coal and coal. Lignite is located in the area of Tuzla, Živinice and Lukavac. The balance reserves of lignite are estimated at 266,689,000 tonnes. The lignite basin "Kreka" (Tuzla) is divided into two synclines (North and South) that extend between the southern slopes of Majevica and the Spreča valley in the northwest-southeast direction. The northern "Kreka syncline" is located in the territory of Tuzla municipality. The thickness of the coal bed ranges from 8 m to 25 m with the floor

slightly sloping to steep. Tuzla Canton is the most important mining and industrial basin in Bosnia and Herzegovina. Brown coal is located in the area of the Đurđevik (Živinice), Grivice and Turija (Banovići) basins. Reserves of brown coal in the area of Živinice municipality are estimated at 34.253.26 tons (surface mines), in the pit of the Đurđevik mine 35.217.767 tons, and in the area of Banovići municipality 176.842 million tons. (Banovići Municipality Development Strategy 2017-2027). Coal deposits are represented on the Majevica Mountain (western, central and eastern sides) in the following locations: Straža, Jasenica, Lemeši, Rožanj, Veselinovići and Perda. The thickness of these layers ranges from 3 to 7.5 m, with the balance reserves amounting to 1.1 million tons. Coal is not currently being exploited in this area.

3.2.Non-metallic mineral industrial resources

The terrain of this area is rich in significant reserves of rock salt, limestone, quartz sand, magnesite and brick clay. In Bosnia and Herzegovina, only salt rock deposits in the Tuzla area are known from the salt beds to this day. The rock salt deposits around Tuzla formed in the Miocene are of younger geological age, in comparison with the already known deposits in Europe and in the world. The total geological potential reserves of brine in the Tuzla Canton are estimated at 374,377,552 m³. The present rock salt exploitation field has been activated at a new reservoir in the „Tetima“ mine, 10 km away from the town of Tuzla. The reservoir covers an area of 393.24 ha and its reserves are estimated at 54,720,000 tonnes (Http://www.vladatk.kim.ba.).

In the area of Tuzla Canton different lithologic-stratigraphic species of limestone are present. The total geological reserves of limestone so far have been estimated at 62,280,213 m³. The largest quartz sand deposits in Bosnia and Herzegovina are located in the area of Tuzla Canton, mainly on the part of the Krekanska Syncline. The „Moluška River“ exploration field covers an area of 50 hectares and extends in an elongated belt about 2400 meters long, from Delić stream in the southwest, and across the Moluška river to the Pasha-bunar stream in the northeast. The width of the investigated part of the layer is 100-200 meters. The direction of delivery is northwest-southeast, with a decrease in a southeast direction, at an angle of 50° to 88°. The thickness of the sand layer ranges from 11 to 130 meters.

The bearing is divided into two separate parts: the larger "west" and the smaller "east". The determined geological balance reserves amount to 4,587, 206 tons. The exploitation field "Bukinje" extends from the stream "Joševica" in the northwest, to the stream "Jezera" in the southeast, about 1100 meters long, the width of the investigated part of the layer ranges from 180-250 meters (sandy substrate of the first roof layer) and occupies an area of about 40 hectares. The direction of delivery is northwest-southeast, with a decrease in the northeast direction of 80-100 meters syncline (Spatial Plan for the area of Tuzla Canton for the period 2005-2025). Potential total reserves of quartz sand were estimated at 14,600,632 tonnes, in the area of the Kreka basin (Tuzla) at around 6 million tonnes, and at the „Šikulje“ mine (Lukavac). The occurrence of quartz sand is at the sites of Pećnik, Kaluđerski brook near the settlement Klokotnica (Gračanica) (http://tuzla-kvarc.ba). Magnesite deposits are represented in the southeastern part of the Konjuh Mountains. The contingency reserves are 1,687,000 tons with only 20% of exploration, and exploitation reserves in two of the five lakes are 1.1.74,000 tons. The deposits of brick clays are known at the localities Džebe and Kulići (Gračanica), at the sites Ratiš, Lipje, Seona, Dedići and Gornji Moranjci (Srebrenik). Potential reserves of brick clay in the area of Tuzla Canton are 200,000 tons.

3.3. Construction materials

Gravel and sand as a river bed occurs in river valleys. Rentable beds are along the Spreča, Tinja and Turija rivers, and certainly one of the most interesting beds is the ''Begove Maline'' on the left side of the Spreče River near Živinice. The potential reserves of the investigated area of this gravel pit is approximately 684,000 m³. Northwest of Živinice towards Dobošnica and Lukavac there are four potential locations as possible gravel deposits in the Tuzla Canton. Depending on the grain size of the raw granules or the purity of the composition, the raw pebbles can be sorted into specific classes, shredded or specially processed depending on use. In the territory of Tuzla Canton, as regards the use of gravel, no activity was recorded in the direction of hydro-amelioration works, as well as activities regarding the extraction of materials from river watercourses. According to the current Law, this type of activity is also subject to concession. If one of the economic entities is interested in extracting material from Lake Modrac, the possibility of concession should be considered since its long existence has partially filled it, thus increasing its accumulation capacity (http://vladatk.gov.ba/, 2016).

Tab. 1: Available non-metallic mineral resources of Tuzla Canton.

ENERGY RESOURCES				INDUSTRIAL PROCESSING			
Resource	Locality	Geological reserves tons/ m³.	Exploited reserves tons/ m³.	Resource	Locality	Geological rezerves tons/ m³	Exploited reserves tons/ m³
Lignite	Tuzla, Kreka basin	1.126.194 t	456.008 t	Rock salt	Tetima 393,24ha	374.377.552 t	54.720.000 t
Brown coal	Banovići, Živinice	245.582 71.596 t	220.000 t	Quartz sand	Kužići, Bukinje and Moluška River layer 30-100m.	100.million t	14.600.632 t
Stone coal	Srebrenik	1.572.300 t	1.100.000t	Limestone	Gračanica, Lukavac, Srebrenik Živinice, Kladanj	62.280.213 m³	-
CONSTRUCTION MATERIALS				Magnesite	Kladanj	1.687.000 t	1.1.74.000 t
Gravel and sand	Živinice Begove maline	684 000 m³.	-	Brick clays	Gračanica Srebrenik	2000.000t	-

Source: Author, according to the source: Spatial Plan for the area of Tuzla Canton for the period 2005-2025 and Tuzla Canton Development Strategy 2016-2020.

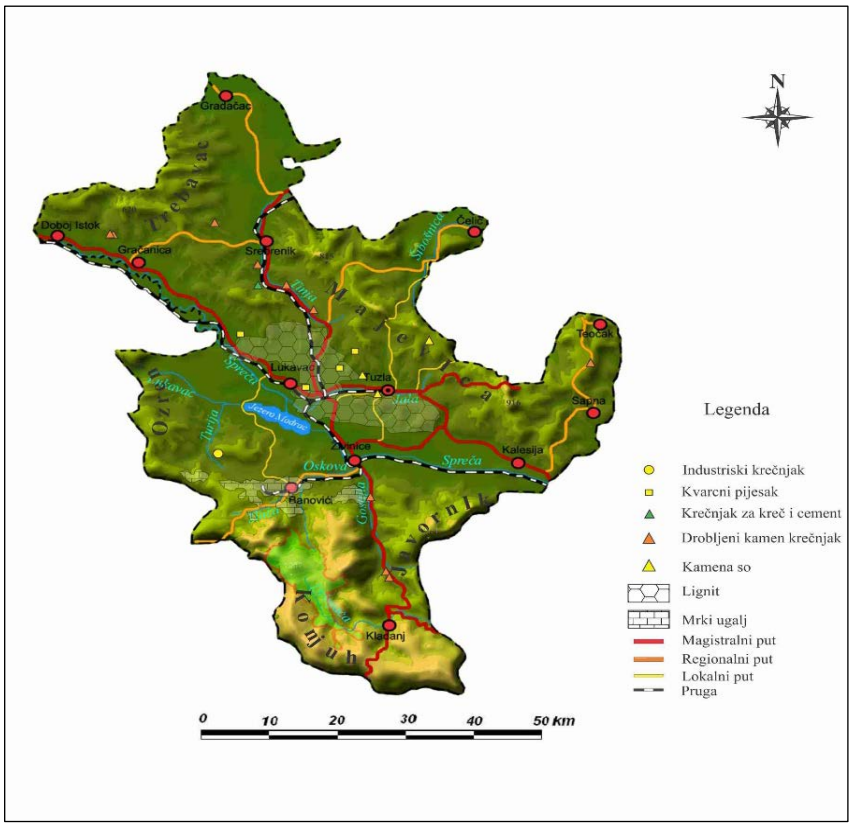

Fig. 1: Spatial distribution of non-metallic mineral resources in the Tuzla Canton.
Source: Author.

4. Analysis of production and consumption of non-metallic mineral resources

4.1 Production and distribution of energy resources

The most important energy resource for the production of secondary energy (electricity, heat and steam) is lignite (also known as brown coal). Until 1992, coal miners in the Tuzla basin produced about 3.9 million tonnes of brown coal annually and up to 5 , 8 million tons of lignite. The current production capacity in the Kreka basin is 2,200,000 tonnes of coal, Banovići 1,500,000 tonnes, and Đurđevik 600,000 tonnes. The Kreka and Đurđevik mines market over 80% of their quantities at the „Tuzla" Thermal Power Plant, while the Banovići Mine markets about 30% of their production in the same period to other markets.

Tab. 2: Analysis of coal placements in the Tuzla Canton.

Area of consumption	Delivery %	Distributor-Supplier
Thermal power plants	63,5	Mines Kreka and Đurđevik
Industry	17,9	
General consumption	18,4	
Own consumption	0,2	

Source: Report on the work of the Concession Commission for 2012, in the area of Tuzla Cnton, Tuzla.

4.2. Electricity production and distribution

Currently, the basis for the functioning and development of the electricity sector in the Tuzla Canton is the Tuzla Thermal Power Plant (730 MW) and the Tuzla Power Distribution Company, as well as the small hydropower plants Modrac (1.9 MW) and Snježnica (0.4 MW). The initial phase is the construction of the replacement Unit 7 at the Tuzla Thermal Power Plant, and the construction of the 350 MW Thermal Power Plant Banovići, which will provide further continuation of brown coal production at the Banovići mine (http://government kim.ba).

Tab. 3: Technical parameters of production capacities of Tuzla thermal power plant for 2013.

The facility of a thermal power plant	Block	Intalled aggregate power	Power	Tehnical minimum	Apparen t power	A kind of coal	Specific consump tion	Average annual production
		(MW)	(MW)	(MW)	(MVA)		kJkWh	GWh
Tuzla	G3	100	90	60	118	LM	14.396	300
	G4	200	180	125	235	LM	12.159	1.020
	G5	200	180	125	235	LM	12.169	1.030
	G6	223	200	115	270,6	M	10.703	1.150
TOTAL		730	650	-	858,6			3.500

Source: Author made according to source of electric power company BiH.

The public utility company "Elektroprenos BiH" is directly responsible for the electricity transmission networks. The distribution of electricity managed by the Tuzla Power Distribution Branch covers the area of the entire Tuzla Canton, including the City of Tuzla and all 12 municipalities, and runs over 10 kV and 35 kV voltage levels. One of the bigger problems is the electricity supply to the city of Tuzla, which is currently only being made from two hubs: the Tuzla Center transformer station and the Tuzla Thermal Power Plant (with a 35 kV mains transformer used primarily to power its own consumption). The total number of customers at all voltage levels in 2013 was 180,071, and the total realized electricity consumption was 1,082 GWh. The number of customers in the last 5 years has increased at both voltage levels: at the high voltage level by 5.5% per year and at the low voltage level by 1.12% (households) and 2.32% (other consumption). As the ratio of the amount of electricity produced and consumption consumed by customers from this area is 12: 1, it is evident that the Tuzla Canton, by its energy potentials, far exceeds its own needs and that it is secured to enter the surrounding markets (http://pwww.vladatk.kim.ba).

4.2 Production and distribution of thermal energy

In addition to generating electricity, the Tuzla Thermal Power Plant for the needs of the electricity system also produces and supplies thermal energy for district heating systems in the urban areas of Tuzla and Lukavac, technological steam for the needs of industry, as well as industrial water for the narrower area of the Tuzla Canton.

The system will need to be upgraded to connect all the facilities that need heat in the city of Tuzla, the development of the district heating network in Lukavac, the construction of hot water systems for the towns of Živinice, Srebrenik, Gračanica and Kalesija (http://www. epbih. ba).

Fig. 2: Thermal power plant „Tuzla“ in Tuzla
Source: Electric Power Industry of Bosnia and Herzegovina, 2019.

The great opportunities in the supply of heat in the coming period can be exploited for agricultural purposes in greenhouses that can be raised in areas where the heating network is being developed. Modern heating systems in the world and in the environment tend to develop hot water networks as close as possible to customers, which ensures reduction of losses in the distribution network and enables greater savings in heat supply. Tuzla Canton is in a more favorable situation than other cantons, due to the fact that the thermal power plant "Tuzla" is in the immediate vicinity of urban and economic centers. In the coming period, the energy sector plans to renew and expand the capacity of energy plants (primarily Tuzla Thermal Power Plants), as well as to expand the central heating system of the city of Tuzla and the Lukavac municipality, as well as the commencement of district heating of the Živinice municipality (http://www.government.kim.ba).

4.3 Production and distribution of industrial non-metallic mineral resources
Exploitation and use of brine
After coal, the exploitation of brine on the basis of which the chemical industry is developing is significant. From the shale deposit of the Tušanj Mine in Tuzla, the exploitation of the stone solis was performed by dry cave methods, and partly by controlled leaching, by the system of exploitation wells. The production capacity of the Tušanj Mine at the existing reservoir was 150,000 tons of rock salt per year.

The second part of the Tuzla rock salt deposit in the area “Trnovac-Hukalo” was exploited by the method of exploitation wells. The brine was pumped from great depths and piped to the wooden reservoirs and then piped for further distribution. These sites provided brine for the needs of the salt and chemical industries in Tuzla and Lukavac. Salt-based industrial production has initiated the development of technologically interdependent and economically related capacities, namely: exploitation of salt water and rock salt in the Tušanj Mine, finalization of salt water in the vacuum salt for eating at the Tuzla Salt Factory, production of soda products: calcined soda, caustic soda and bicarbonate of soda at the Lukavac Soda Factory, production of chlorine, propylene oxide, polyols at the Polihem Tuzla and production of detergents and cosmetics at the DITA Tuzla factory. During 2005, the production

facility of the pit "Tušanj" closed. Due to ecological reasons and exhaustion of existing reservoirs, orientation is directed to the new reservoir of rock salt "Tetima" mine, located 8 km northeast of Tuzla (http://www.vladatk.kim.ba.).

Finalization of salt water, with ammonia and carbon dioxide, as a raw material component, is represented at the Lukavac Soda Factory, the only one of its kind in Bosnia and Herzegovina. The new development direction of the Tuzla Salt Factory is infusion solutions, spices and special types of salts. In addition to nutrition, salt is also used in the herbicide industry, then in metallurgy, construction, textile and other industrial segments (Kurtović 2000).

Fig. 3: Tuzla Salt products on the market.
Source: www.solana.ba.

The medicinal properties of the brine are used for tourist purposes on the Pannonian Lakes and for medical purposes at the Aqua Bristol Spa in Tuzla, which offers Halotherapy as part of its services.

Halotherapy is an auxiliary and completely natural method for the prevention and improvement of the health of pulmonary function and the respiratory system (Aqua Bristol Spa, Tuzla 2019).

Fig. 4: Aqua Bristol Spa, Salt room.
Source: Aqua Bristol Spa, Tuzla, 2019.

Quartz sand exploitation and use

Company "Tuzla-Kvarc" is actively engaged in the exploitation of quartz sand and has geological reserves in the area of the northern Kreka Synclinarium of the Tuzla basin, which is also the best explored part with the highest quality reserves in Bosnia and Herzegovina. The fields of exploitation available to the mine are: "Kužići", "Bukinje" and "Moluška River". Sandstones and quartzites find application in many segments of the modern industry, such as metallurgy, chemical, civil engineering, glass, ceramics and other industries. In the casting industry, quartz is an essential ingredient in the production of molds and cores as it is highly resistant to high temperatures and can therefore accommodate liquid metals. However, the most common area of application of quartz is in the construction industry: in the production of stone, concrete, tiles and slabs, in the composition of cover materials. In construction, sandstones are used as either a decorative stone or as a technical stone for road filling. In chemical production, quartzite is a very important filler for paints and varnishes like many other synthetic products. In the glass industry pure quartz is used in the production of optical and electronic products. Quartz has significant potential that can be utilized in the production of modern and high-tech products in the production of computer chips, optical devices and technical ceramics.

For the time being, quartz sand is used in construction and in the manufacture of certain filter backfills, for the purification of some fluids and for the production of gas concrete.

It should also be emphasized that more significant use of this mineral resource in other industries can be expected in the future, such as the production of flat and

packaging glass, water glass, silicate products, different applications in foundry and certainly more diverse applications in the field of construction.

Limestone exploitation and use

In thirteen registered limestone sites in the Tuzla Canton, ten have been identified and exploited by various entities. At the remaining three sites of "Hrdar Kos" near Kladanj (investigations have been completed and reserves have been confirmed, but no exploitation is being carried out), the sites "Zeketuša" near Srebrenik and "Ravni Bor" near Živinice are under investigation.

Tab. 4: Limestone exploitation in Tuzla Canton.

	Municipality	Locality	Exploit
1	Lukavac	Vijenac - Lukavac	RK ''Vijenac'' Lukavac
2	Srebrenik	Duboki Potok- Srebrenik	''Ingram'' Srebrenik
3	Srebrenik	Drenik - Srebrenik	''Ingram'' Srebrenik
4	Srebrenik	Orlova Klisura-Srebrenik	''Jata'' Srebrenik
5	Živinice	Oštro Brdo- Gračanica	''Terakop'' Tuzla
6	Kladanj	Stupari - Kladanj	''Tuzlaputevi'' Tuzla
7	Kladanj	Hrastić-Kladnja	''Geoinženjering'' Tuzla
8	Živinice	Bučje-Đurđevik	''Kamenolom Kotornica'' Živinice
9	Gračanica	Sklop-Malešici - Gračanica	''Gramat'' Gračanica
10	Gračanica	Drijenča-Malešici-Gračanica	''Drijenča'' Gračanica

Source: Author, based on http: //vladatk.gov.ba,2016.

In addition to these active quarries and those in the exploration phase, it should be noted that in the area of Tuzla Canton there are several other potential sites that, if interested companies are interested, should be investigated or defined from the aspect of reserves and quality and included in the existing production. These are the localities in the Teočak and Gradačac municipalities. Limestones are widely used in various segments of the industry. The most important consumers of limestone are construction, metallurgy, chemical industry, sugar, paper and glass industries. Limestones in civil engineering are used as technical stones.

Magnesite exploitation and use

The exploitation rights to this mineral are at the disposal of the Kladanj magnesite mine, which started operating again in 2014. Magnesite as a non-metallic mineral resource, according to its characteristics, is used in the ceramics industry, construction, chemical industry, pharmaceutical industry, and especially in the refractory industry is the most important industrial mineral. Magnesite as a very light element is widely used in military and other special industries.

5. Conclusion

Coal remains the highest priority in the use of energy resources in the Tuzla Canton. Construction of a new Unit 7 based on the best technologies Tuzla Thermal Power Plant should enable high-efficiency production in new coal production capacities and reduction of greenhouse gas (CO_2) emissions. This approach will allow coal to be used to produce heat and electricity for the next two to three decades. The planned development and upgrading of the electricity generation sector, as well as sufficient energy reserves, are the basis for expanding the district heating system, primarily for households and industry, but the opportunities offered to agriculture and other economic activities should not be neglected. This will overcome one of the biggest problems in the use of energy in individual combustion plants, especially in larger urban centers.

When it comes to the production and distribution of industrial mineral non-metallic resources, rock salt is of the greatest importance. The current exploitation of brine is carried out in four boreholes and 11 in industrial production. In the next period, it is planned that 15 wells will be in production and two will be leaked, which will increase production by 25% relative to needs. Also, it is planned to open a new production facility on the second part of the bearing. Exploitation from the Tetima Mine, according to an annual production of 2.6 million m³ of brine, could last for five to six decades. The current main consumers of brine besides the factory in Tuzla and Lukavac are Panonika and the Aqua Bristol Spa in Tuzla.

According to the above indicators, the current use of other non-metallic resources in the Tuzla Canton is not satisfactory. In the territory of Tuzla Canton, as regards the use of gravel, no activity was recorded in the direction of hydro-amelioration works, as well as activities regarding the extraction of materials from river watercourses. As a whole, the exploration reserves of mineral non-metallic resources have not been sufficiently explored and known throughout the Tuzla Canton, this is particularly true for the investigation of potential deposits of gabbro-spilite and gabbro-dolerite in the Konjuh Mountain area (in the municipalities of Banovići and Kladanj, dacites and andesite in the surrounding area) Soap, marl in the vicinity of Banovići, diabase, dolerite near Tuzla and Srebrenik.

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EXPLOITATION AND USE OF NON-METAL MINERAL RESOURCES OF THE TUZLA CANTON

Summary

Tuzla Canton is located in the northeastern part of Bosnia and Herzegovina and its one of ten cantons in the Federation of Bosnia and Herzegovina. Tuzla Canton has an area of 2,652 km² (10.10% of the Federation of Bosnia and Herzegovina and 5.17% of Bosnia and Herzegovina) with 477,278 inhabitants. It has a favorable geo-traffic position and is connected to the Pannonian Plain and the Adriatic coast. There are 13 municipalities in the Tuzla Canton: Banovići, Doboj-Istok, Čelić, Gradačac, Gračanica, Kalesija, Kladanj, Lukavac, Srebrenik, Sapna, Tuzla, Teočak and Živinice

The area of Tuzla Canton has significant non-metallic mineral resources, which is an economic basis in economic development. The most significant energy resource is coal. Lignite coal exploitation reserves are estimated at 266,689,000 tons and are distributed in the areas of Tuzla, Živinica and Lukavac. Lignite is exploited in the Kreka basin (Tuzla). It is the main energy source in the production of electricity in the Tuzla Thermal Power Plant. The brown coal exploitation reserves are estimated at 220,000,000 tons and are distributed in the area of Banovići and Živinice. When it comes to the production and distribution of industrial mineral non-metallic resources, rock salt is of the greatest importance. The geological potential reserves of brine are estimated at 374,377,552 m³. In the course of 2018, 3.5 million m³ of brine was exploited at the Tetima mine. The main consumers of the brine are the factories in Tuzla and Lukavac, the Spa and Panonika in Tuzla. Quartz sand deposits are located in the vicinity of Tuzla and Gracanica. Quartz sand potential reserves are estimated at 14,600,632 tonnes. Limestone reserves are estimated at 62,280,213 m³. Limestone is exploited in the area of Gracanica, Lukavac, Srebrenik, Zivinice and Kladanj.

Coal remains the highest priority in the use of energy resources in the Tuzla Canton. Construction of a new Unit 7 based on the best technologies Tuzla Thermal Power Plant should enable high-efficiency production in new coal production capacities and reduction of greenhouse gas (CO_2) emissions. When it comes to the production and distribution of industrial mineral non-metallic resources, rock salt is of the greatest importance. The current exploitation of brine is carried out in four boreholes and 11 in industrial production. In the next period, it is planned that 15 wells will be in production and two will be leaked, which will increase production by 25% relative to needs. Also, it is planned to open a new production facility on the second part of the bearing. Exploitation from the Tetima Mine, according to an annual production of 2.6 million m³ of brine, could last for five to six decades. The current main consumers of brine besides the factory in Tuzla and Lukavac are Panonika and the Aqua Bristol Spa in Tuzla.

According to the above indicators, the current use of other non-metallic resources in the Tuzla Canton is not satisfactory. In the territory of Tuzla Canton, as regards the use of gravel, no activity was recorded in the direction of hydro-amelioration works, as well as activities regarding the extraction of materials from river watercourses.

As a whole, the exploration reserves of mineral non-metallic resources have not been sufficiently explored and known throughout the Tuzla Canton, this is particularly true for the investigation of potential deposits of gabbro-spilite and gabbro-dolerite in the Konjuh Mountain area (in the municipalities of Banovići and Kladanj, dacites and

andesite in the surrounding area) Soap, marl in the vicinity of Banovići, diabase, dolerite near Tuzla and Srebrenik.

NAVODILA ZA PRIPRAVO ČLANKOV V REVIJI ZA GEOGRAFIJO

1. Sestavine članka

Članki morajo imeti naslednje sestavine:
- glavni naslov članka,
- ime in priimek avtorja,
- avtorjeva izobrazba in naziv (na primer: dr., mag., profesor geografije in zgodovine, izredni profesor),
- avtorjev poštni naslov (na primer: Oddelek za geografijo Filozofska fakulteta Univerza v Mariboru, Koroška 160, SI – 2000 Maribor, Slovenija),
- avtorjev elektronski naslov,
- izvleček (skupaj s presledki do 800 znakov),
- ključne besede (do 8 besed),
- abstract (angleški prevod naslova članka in slovenskega izvlečka),
- keywords (angleški prevod ključnih besed),
- članek
- summary (angleški prevod povzetka članka, skupaj s presledki do 8000 znakov).

2. Citiranje v članku

Avtorji naj pri citiranju med besedilom navedejo priimek avtorja in letnico, več citatov ločijo s podpičjem in razvrstijo po letnicah, navedbo strani pa od priimka avtorja in letnice ločijo z vejico, na primer: (Drozg 1995, 33) ali (Belec in Kert 1973, 45; Bračič 1975, 15 in 16).

Enote v poglavju Viri in literatura naj bodo navedene po abecednem redu priimkov avtorjev, enote istega avtorja pa razvrščene po letnicah. Če je v seznamu več enot istega avtorja iz istega leta, se letnicam dodajo črke (na primer 1999a in 1999b). Vsaka enota je sestavljena iz treh stavkov. V prvem stavku sta pred dvopičjem navedena avtor in letnica izida (če je avtorjev več, so ločeni z vejico, z vejico sta ločena tudi priimek avtorja in začetnica njegovega imena, med začetnico avtorja in letnico ni vejice), za njim pa naslov in morebitni podnaslov, ki sta ločena z vejico. Če je enota članek, se v drugem stavku navede publikacija, v kateri je članek natisnjen, če pa je enota samostojna knjiga, drugega stavka ni. Izdajatelja, založnika in strani se ne navaja. Če enota ni tiskana, se v drugem stavku navede vrsta enote (na primer elaborat, diplomsko, magistrsko ali doktorsko delo), za vejico pa ustanova, ki hrani to enoto. V tretjem stavku se za tiskane enote navede kraj izdaje, za netiskane pa kraj hranjenja.

3. Preglednice in slike v članku

Vse preglednice v članku so oštevilčene in imajo svoje naslove. Med številko in naslovom je dvopičje. Naslov konča pika. Primer:

Preglednica 1: Število prebivalcev Ljubljane po posameznih popisih.

Vse slike (fotografije, zemljevidi, grafi in podobno) v članku so oštevilčene enotno in imajo svoje naslove. Med številko in naslovom je dvopičje. Naslov konča pika. Primer:

Slika 1: Rast števila prebivalcev Ljubljane po posameznih popisih.

Slika 2: Izsek topografske karte v merilu 1 : 25.000, list Kranj.

Za grafične priloge, za katere avtorji nimajo avtorskih pravic, morajo avtorji od lastnika avtorskih pravic pridobiti dovoljenje za objavo. Avtorji naj ob podnapisu dopišejo tudi avtorja slike.

4. Sprejemanje prispevkov

Avtorji morajo prispevke oddati natisnjene v enem izvodu na papirju in v digitalni obliki, zapisane s programom Word. Digitalni zapis besedila naj bo povsem enostaven, brez zapletenega oblikovanja, poravnave desnega roba, deljenja besed, podčrtavanja in podobnega. Avtorji naj označijo le mastni (krepki) in ležeči tisk. Besedilo naj bo v celoti izpisano z malimi črkami (razen velikih začetnic, seveda), brez nepotrebnih krajšav, okrajšav in kratic. Zemljevidi naj bodo izdelani v digitalni vektorski obliki, grafi pa s programom. Fotografije in druge grafične priloge morajo avtorji oddati v obliki, primerni za skeniranje, ali pa v digitalni rastrski obliki z ločljivostjo vsaj 120 pik na cm oziroma 300 pik na palec, najbolje v formatu TIFF ali JPG.

Avtorji morajo za grafične priloge, za katere nimajo avtorskih pravic, priložiti fotokopijo dovoljenja za objavo, ki so ga pridobili od lastnika avtorskih pravic.

Avtorji naj prispevke pošiljajo na naslov urednika:

Igor Žiberna
Oddelek za geografijo
Filozofska fakulteta
Univerza v Mariboru
Koroška 160
2000 Maribor
e-pošta: igor.ziberna@um.si
telefon: 02 2293 654
faks: 02 251 81 80

5. Recenziranje člankov

Članki se recenzirajo. Recenzijo opravijo člani uredniškega odbora ali ustrezni strokovnjaki zunaj uredniškega odbora. Če recenziji ne zahtevata popravka ali dopolnitve članka, se avtorju članka recenzij ne pošlje. Uredniški odbor lahko na predlog urednika ali recenzenta zavrne objavo prispevka.

POROČILO RECENZENTA

1. Avtor prispevka

2. Naslov prispevka

3. Recenzent (ime in priimek, znanstveni ali strokovni naziv)

4. Pomen prispevka (ali prinaša nova znanstvena spoznanja)
a) da
b) ne
c) delno

5. Primernost prispevkov (ali naslov primerno poda vsebino)
a) da
b) ne
c) delno

6. Uporaba znanstvenega aparata, ustrezno navajanje virov in literature
a) da
b) ne (opozori na morebitne pomanjkljivosti)
c) delno

7. Pripombe in predlogi za izboljšanje besedila (priložite na posebnem listu)

8. Priporočam, da se prispevek sprejme:
a) brez pripomb
b) z manjšimi popravki
c) po temeljiti reviziji (na osnovi pripomb recenzenta)
d) zavrne

Datum: Podpis recenzenta: