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GEOTURISMO NO MÉDIO VALE DO RIO NIŠAVA, SUDESTE DA SÉRVIA – ESTADO ATUAL E QUESTÕES PARA O SEU DESENVOLVIMENTO FUTURO

GEOTOURISM IN THE NIŠAVA RIVER MIDSTREAM VALLEY, SOUTHEASTERN SERBIA – CURRENT STATE AND ISSUES OF FUTURE DEVELOPMENT

GEOTURISMO DEL VALLE MÉDIO DEL RÍO NIŠAVA, SURESTE DE SERBIA - SITUACIÓN Y CUESTIONES ACTUALES PARA SU DESARROLLO FUTURO

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RESUMO
A região do leste e sudeste da Sérvia tem a maior coleção do património geológico da República da Sérvia. Na parte sudeste da Sérvia, depois de varios partes mineralógicas das rochas, o rio Nišava rasgou um vale composto. Esta é uma área de extraordinaria capacidade de natureza por causa de grande número de raridades naturais e fenômenos que têm grandes possibilidades de desenvolvimento do geoturismo. Apesar de predisposições excepcionais quando estamos a falar do património geológico, geosítios que estão nesta área ainda são desconhecidos para um público mais amplo. O objetivo deste trabalho é a utilização do modelo de avaliação para destacar os valores de geosítios em Srednje Ponišavlje para avaliar a qualidade dele e também avaliar o sucesso do desenvolvimento do geoturismo. Usando o modelo GAM, foram analisados sete geosítios, aqueles que têm características extraordinarias geológicas / geomorfológicas e hidrológicas do desenvolvimento do geoturismo.
Palavras-chave: Nišava, Sićevačka klisura, geoturismo, modelo GAM

ABSTRACT
The region of East and Southeast Serbia, has the biggest collection of geoheritage sites in the Republic of Serbia. In the southeastern part of Serbia, following various mineralogical compositions of the rocks, the Nišava river has carved a composite valley. This is an area of extraordinary nature capacity because of large number of natural rarities and phenomena that have great possibilities for geotourism development. Despite exceptional predispositions in terms of the value of geological heritage, geosites of this area are still unknown to a wider audience. Aim of this paper is to analyze current state of geotourism and to highlight the values of geosites in Srednje Ponišavlje using the evaluating model as well to evaluate its quality and give the assessment of geotourism development success. Using GAM model, 7 geosites have been analyzed, the ones with extraordinary geological/geomorphological and hydrological features for geotourism development.
Keywords Nišava; Sićevačka klisura; geotourism; geoconservation; GAM model

RESUMEN
La región del este y sureste de la Serbia tiene la mayor colección de patrimonio geológico en la República de Serbia. En la parte sureste de Serbia, después de varias composicones mineralógicas de las rocas, el río Nišava ha tallado un valle compuesto. Esta es un área de capacidad extraordinaria de naturaleza gracias a enorme número de rarezas naturales y fenómenos que tienen grandes posibilidades del desarrollo del geoturismo. A pesar de predisposiciones excepcionales cuando estamos hablando de patrimonio geológico, geositios de esta zona aún están desconocidos a un público más amplio. Objetivo de este trabajo es utilización de modelo de evaluación para poner en relieve los valores de geositios en Srednje Ponišavlje para evaluar su calidad y evaluar éxito del desarrollo del geoturismo. Utilizando el modelo GAM, se han analizado 7 geositios, los que tienen características extraoridinarias geológicas/geomorfológicas y hidrológicas para el desarrollo del geoturismo.
Palabras clave: geoturismo; geoconservación, modelo GAM, Nišava; Sićevačka klisura;

1. INTRODUCTION

Geodiversity, considered as geological heritage and geoconservation have been understood as new challenges in geological research in the last years of the twentieth century (GRAY 2004). Informations provided by geodiversity help the scientists to understand how the Earth has changed over time. According to DIXON (1995) components of geodiversity that have significant value to humans, with scientific, educational, aesthetical and inspirational meaning can be considered as geoheritage. In the recent times, the phenomena of geoheritage is increasingly revealed to the general public through the new type of tourism, geotourism (VASILJEVIĆ, et al., 2011).

Geotourism represents a special form of tourism that focuses od geology and landscape forms (HOSE, 1995). Therefore, we can say that geotourism is connected to sustainable development of some area. Geotourism started being popular in some tourists' circles, eg. to the tourists who search for new adventures and are interested in geological features of the planet (DOWLING, NEWSOME, 2006; NEWSOME, DOWLING, 2010). Authors CHEN, et al. (2014) say that it is clear that geotourism is a "child of the new age". According to them, one can thank geotourism for creating a solid base of new tourism based on geoheritage, which will serve to nature conservation and its sustainable using. Definition has recently been refined as a form of tourism that specifically focuses on landscape and geology (NEWSOME, DOWLING, 2010). This advances an earlier concept of geotourism as strictly 'geological tourism'. Geotourism promotes tourism to 'geo-sites' and conservation of geodiversity and understanding of earth sciences through appreciation and learning. The aim of geotourism is to make visitors aware of, and to gain some understanding of geological features that surround them. It has links with adventure tourism, cultural tourism and ecotourism, but is not synonymous with any of these forms of tourism. It is about creating a geotourism product that protects geoheritage, helps build communities, communicates and promotes geological heritage, and works with a wide range of different people. Geotourism has an increasingly important contribution to the economy by creating jobs for local residents: tour companies, drivers, guides, accommodation providers, food outlets.

As mentioned earlier, geotourism is based on geoheritage promotion on tourist market. "Geoheritage consists of all geological, geomorfological, pedological and special archaeological values formed within lithosphere constitution, its morphological formatting and dependence between nature and culture, which (due to their unique value) have to be under a special care of all the official factors" (MIJOVIĆ, 2002). Even though the term geoheritage, as well as the term geodiversity is a modern term, it is actually present in the work of J. Cvijić, J. Ćujović, V. Petković. Later on, many different nature scientists started focusing on nature preservation, calling these natural features "curiosities". Today, these are the objects of geoheritage, and many of them are recognized thanks to the scientists who discovered and researched them.

Since 1995 Serbia is a member of ProGEO association, when the National Council for geoheritage was formed (with 11 members – 5 geologists, 4 geomorfologists, 1 archaeologist, 1 pedologist). The inventory of 650 geoheritage sites is far from complete. Groups for geomorphology and speleology made some preliminary lists with 210 geoheritage sites – the sites that fulfill the minimum conditions to be a part of this list.
The following activities should be forming of two geoparks – Loess geopark (Titel loess site, Stari Slankamen, Čot in Stari Slankamen, Surduk, Batajnica, Zemun, Ruma, Negotin, Grocka, Požarevac and Stalać) and Karst Geopark (Karst phenomena of Dubašnica, mountains Kučaj and Beljanica) (BELIJ, 2007).
As already noted, Serbia is just at the beginning of geotourism development. Significant improvements are visible when speaking about the number of tourists, but the offer is still not rich enough to attract more tourists. Objects of geoheritage in Serbia are visited by students mostly as well as the professors and scientists who research these objects.

There are potentials for geotourism development: Serbia has over 650 objects of geoheritage identified. However, it is not realistic to expect that all of the geoheritage objects will find their way to the geotourists, because not every object of geoheritage is a geosite.
The subject of this paper is the identification of the potentials for geotourism development, as well as pointing out the current state of this type of tourism in the Nišava river Midstream Valley (Srednje Ponišavlje). The need to examine this area by studying the tourism potential emerged due to a lack of data on the sites themselves, a very small number of scientific papers related to given topics which would certainly, at least to a lesser extent, assist participants in planning tourism development.

The initial hypothesis of this study points to the existence of exceptional potential on which can the geotourism offer of the Nišava river Midstream valley be based on, but also points to the existence of major shortcomings that would contribute to the development of geotourism.

2. MATERIALS AND METHODS

In order to assess the value of the geosites, a preliminary Geosite Assessment Model (GAM) proposed by VUJIČIĆ, et al. (2011) was used. This model can identify the most attractive geosites, which should assist in planning and in the sustainable management of natural resources, as well as in the application of natural resources for geotourism. The assessment includes an inventory of sites as well as proposals for their protection, promotion and monitoring (PEREIRA, et al. 2007). The methodology is based on several existing models and is represented by two main groups of values (Main Values) and additional criteria (Additional Values), which are divided into primary and secondary indicators (Table 1). Based on the proposed inventory, geosites are assessed individually to achieve final evaluations. The first group (Main Values) constists of three types of values: scientific/educational (VSE), landscape/aestetic (VSA) and protection/conservation (VPr). The second group (Additional Values) consists of functional (VFn) and tourist values (VTr). We can conclude that there are 12 subindicators for Main Values and 15 subindicators for Additional Values. All the subindicators are marked from 0 to 1 (VUJIČIĆ, et al., 2011).

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Table 1 – The list of the primary and secondary indicators according to GAM model

Main Values					
Grade	*0*	*0.25*	*0.5*	*0.75*	*1*
Scientific/Educational values (VSE)					
Rarity	Common	Regional	National	International	The only occurence
Representativeness	None	Low	Moderate	High	Utmost
Knowledge on geoscientific issues	None	Local publications	Regional publications	National publications	International publications
Level of interpretation	None	Moderate level of processes but hard to explain to non experts	Good example of processes, but hard to explain to non experts	Moderate level of processes but easy to explain to common visitor	Good example of processes and easy to explain to common visitor
Scenic/Aesthetic values (VSA)					
Viewpoints	None	1	2 do 3	4 do 6	More than 6
Surface	Small	-	Medium	-	Large
Surrounding landscape and nature	-	Low	Medium	High	Utmost
Environmental fitting of sites	Unfitting	-	Neutral	-	Fitting
Protection (VPr)					
Current condition	Totally damaged as a result of human activities	Highly damaged as a result of natural processes	Medium damaged (with essential geomorphologic features preserved)	Slightly damaged	No damage
Protection level	None	Local	Regional	National	International
Vulnerability	Irreversible (with possibility of total loss)	High (could be easly damaged)	Medium (could be damaged by natural processes or human activities)	Low (could be damaged only by human activities)	None
Suitable number of visitors	0	0 to 10	10 to 20	20 to 50	More than 50

Additional Values					
Grade	*0*	*0.25*	*0.5*	*0.75*	*1*
Functional values (VFn)					
Accessibility	Inaccessible	Low (on foot with special equipment)	Medium (by bicycle)	High (by car)	Utmost (by bus)
Additional natural values	None	1	2 to 3	4 to 6	More than 6
Additional anthropogenic values	None	1	2 to 3	4 to 6	More than 6
Vicinity of emissive centres	More than 100 km	100 to 50 km	50 to 25 km	25 to 5 km	Less than 5 km
Vicinity of important road network	None	Local	Regional	National	International
Additional functional values	None	Low	Medium	High	Utmost

Touristic values (VTr)					
Promotion	None	Local	Regional	National	International
Annual number of organized visits	None	Less than 12 per yeae	12 to 24 per year	24 to 48 per year	More than 48 per year
Vicinity of visitors centres	More than 50 km	50 to 20 km	20 to 5 km	5 to 1 km	Less than 1 km
Interpretative panels	None	Low quality	Medium quality	High quality	Utmost quality
Annual number of visitors	None	Low (less than 5000)	Medium (5001 to 10 000)	High (10 001 to 100 000)	Utmost (more than 100 000)
Tourism infrastructure	None	Low	Medium	High	Utmost
Tour guide service	None	Low	Medium	High	Utmost
Accomodation	More than 50 km	50 to 25 km	25 to 10 km	10 to 5 km	Less than 5 km
Restaurants	More than 25 km	25 to 10 km	10 to 5 km	5 to 1 km	Less than 1 km

The result of the assessment is a chart consisting of nine fields in which geosites are classified according to their suitability in respect of the basic characteristics of tourism and in terms of additional key values represented on the X and Y axes. Those fields are indicated by Z (i,j) (i,j=1,2,3), and this is based on the grades received in the previous evaluation process. Main gridlines that create fields for the X axis have a value of 4 and for the Y axis of 5 units (VUJIČIĆ, et al. 2011).

2.1 STUDY AREA

Srednje Ponišavlje is located in southeastern part of the Republic of Serbia (Nφ 43° 19′ 00", Eλ 22° 07′ 00") (Figure 1).

The area of the Nišava river valley attracted the attention of geographers and biologists very early. As early as 1891 Đ. Jovanović wrote about the caves in the gorge and in 1909 P. Janković devoted a comprehensive monograph to the development Nišavska valley. Among botanists S. Petrović researched the flora of this region on two occasions (in 1882 and 1885, respectively) (JAKŠIĆ,MOMIROVIĆ, 2010).

Nišava river minstream valley (Srednje Ponišavlje) can be described as a composite geomorphological whole consisting of Belopalanačka and Koritnička pit and Crvena reka wellhead (PETROVIĆ, 1998). Belopalanačka pit is 22 km long with the width of 4 km. Koritnička pit is 18 km long. The area of the Nišava river midstream valley covers an area of 516 km^2 (MITIĆ, 2006). Author KOSTIĆ (1952) includes also Đurđevo polje pit in the area of Nišava river midstream valley (Figure 2).

In the geological structure, we find gread differences. In the north and east of the overwhelming mass of rocks consisting of Mesozoic limestone. The area is in NW-SE cut off by the Balkan and Rhodope tectonic dislocation. Tectonic brokenness of the field enabled the intensive process of karst cycle of the limestone mass. The upper limestones contain all the parties, both surface and underground karst morphologically developed forms. A large number of caves, caverns, rock shelters, cliffs and other geomorphological forms, make the area very interesting.

Figure 1 - Geographical position of Nišava River Midstream Valley
(source: https://sh.wikipedia.org/wiki/Geografija_Srbije; modified)

The bed of the Nisava River was formed after the Neogene lakes retreated and dried out. This river made several terraces during its formation, the highest of which is 508 m above sea level.

Figure 2 - Proposed geosites in Nišava River Midstream Valley
(Source: GoogleEarth; modified)

This area of the Balkan Peninsula is a part of seismically highly active area and is included in the Mediterranean–Trans-Asian Seismic Belt.
An interesting hydrological phenomenon are hot springs. Of special value are numerous monuments of culture, especially monasteries of the Holy Mother of God and St. Petka.

Based on the criteria identified for the selection of geosites for geotourism (CONDORACHI 2011; LADÁNYI, et al. 2011) and the research of their aesthetic attractiveness and accessibility for visitors (MIJOVIĆ, 2002), a list of geosites has been complied (Table 2). The list of geosites is inspired by the list of author MITIĆ (2006) and presented in figure 2.

Table 2 - The list of geosites according to classification of Mitić (2006) (modified)

Mark	Proposed geosite name	Description
SURFACE KARST RELIEFS		
GS_1	Krupačko vrelo	It springs from the slope of Svrljiške planine, near Krupac village, in an submerged sinkhole depression. The basins' maximum depth is 16,5m. The highest yield in the rubble of Eastern Serbia. Protected since 1975.
GS_2	Visokoplaninski kras Valožja	Surface 16 km^2; The highest and the largest plateau of Srednje Ponišavlje; It was built from the lower Cretaceous limestone ; High degree of karstification ; The pristine valleys, hanging valleys, cracks and pits ; Protected since 1983.
UNDERGROUND KARST RELIEFS		
GS_3	Sinkhole under Trem	The abyss pit, occurs at the end of the karst depressions; highest karst cave in Eastern Serbia and the only constant freezer, which permanently provides snowy ice mass.
GS_4	Belava	Karst terrain created by a complete cave breaking
FLUVIAL RELIEF		
GS_5	Sićevačka klisura	Nisava gorge. Its length is 17km, deep 260 to 360m. Bela

		Palanka ravine connects with Donje Ponišavlje (Nišava river low stream valley). It is divided by Ostrovica valley to the upper - and lower canyon. The valley floors in the gorge bend in the form of arches or vaults. Fissure lines and zones are determined by the direction of interference, firstly by lake island, later by the inherited Nisava Valley. Protected since 1976.
GS_6	The occurrence of magmatic rock gabbro in Toponica	The research of metamorphic gabbro from Toponica river demonstrated the high quality of this rock. Stone is a dark green to black in color, easy to cut and polish to a high gloss. There is a possibility of its exploitation, which could threaten the flow of Toponica river, which is why it is necessary to put it under protection.
GS_7	Suteska Sv. Otac	Pointed epigeny of Nišava river, 1.5km long; Connects Đurđevpoljska valley with Bela Palanka basin; it is cut in the north edge of the mountain Belava; On the right side of the Nišava valley terraced, rocky plateau are preserved; Ramonda Serbica could be found in the easternmost part; archaeological sites; Monasteries
PEATS		
GS_8	Krupac lake	Low peat; Its length is about 1km and average width ranges from 50 to 60 m. The depth varies, and near the dam is about 4 m, while the upper part is shallow; Supplied with water from springs and several underwater springs.

After making an inventory of the geoheritage objects considered to be tourist potentials, it is necessary to determine that potential quantitavely in order to choose geoheritage objects which are worth investing in.

3. RESULTS AND DISCUSSION

According to GAM model, the two major groups of factors are assessed: the main values, where the scientific, educational, aesthetic, ecological values are assessed, as well as the added value, where the tourist equipment is assessed. The experts are the ones who assess and eventually obtain a table with grades, divided into main and additional values.

In general, Srednje Ponišavlje represents an undiscovered geodestination, which hides many intresting contents, interesting firstly to geotourists. The scientific values of many localities has a regional significance, but represents extraordinary examples for wide audience, which is its main value.

When analyzing the basic values according to GAM model, the focus of our interests should be scientific, educational, aesthetic and ecological values. Scientific values are represented by a number of publications concerning the geosites. When analyzed from this perspective we see that geosites representing regional phenomenon, or that the degree of rarities is at a low level. Furthermore, scientific publications are of national importance, and as pointed out in the introduction, are very rare and out of date. If there are any, they are a monograph of certain municipalities that belong to the Nišava river Midstream valley and physical-geographical features are mentioned to a lesser extent.

If the educational importance is examined, geosites represent a relatively good examples for explanation the wider audience. The representativeness of the site is in excellent condition and aesthetic characteristics can boast the highest marks.

However, if we talk about the level of protection the situation is not suitable. Most of the geosites are protected by the Republic of Serbia, which guarantees degradation reduction, even though the geosites aren't threatened by any anthropological nor natural degradation.

Krupačko vrelo (GS_1). Degradation of this spring reached its maximum by building a concrete wall around it, which made the spring to lose much of its beauty and landscape attractiveness. Even though it is

protected, the spring suffered from much degradation. The road that leads to the spring is narrow and old and unsuitable for big transport means (such as bus). Since its protection in 1975, no scientific work has been conducted regarding to this spring.

Visokoplaninski kras Valožja (GS_2). This plateau is still well protected and isn't degraded by human or any other factor. The main problem is with uncontrolled cottages constructions and forest roads that are being built without any control. This area needs to be protected more in order to keep it unique and to preserve its nature. Since its protection in 1983, no scientific work has been conducted.

Sinkhole under Trem (GS_3). This sinkhole is unique due to the fact that it is a constant freezer and provides ice and snowy mass during the whole year. This type of a cave is unique in the Balkans and is very rare in the world so it needs to be protected. Currently, the cave is hardly accessible to the visitors, except the experienced climbers. It needs to be more investigated by the scientists (geographers, biologists etc.).

Belava (GS_4). This interesting karst terrain is suitable for scientific research because it provides a clear picture of ex-underground karst terrain that can be easily seen and reach. Not scientifically explored since the middle XIX century, this terrain needs more exploring and could be noted as a perfect site for all the potential geotourists and scientists interested in karst relief.

Sićevačka klisura (GS_5). Regional nature park, 17 km long, between Niš and Pirot pit. Composed from many geological formations, such as Gradištanski canyon, Prosek gorge etc. Sićevačka klisura is rich with geosites such as: caves, sinkholes, cracks, thermal springs… Sićevačka klisura is already equipped with the infrastructure, as the international road Niš-Sofia with 13 tunnels goes through the gorge. Sićevačka klisura is actually totally accessible and this could be easily used for geotourism purposes.

The occurrence of magmatic rock gabbro in Toponica (GS_6). This phenomena is interesting because of the rock gabbro and could be especially interesting for geography and petrology students. Exploatation of this rock is also possible, but in order to do this, the total flow of Toponica river should be moved and endangered.

Suteska Sv. Otac (GS_7). Geomorphological structure combined with a few archaeological sites, habitat of rare species of Rhamonda Serbica Panc and an old Monastery of St. Nikola is easily accessible and could be interesting for potential geotourists. This area should be protected due to its remarkable position and content and therefore organized for visits.

Krupac lake (GS_8). A unique peat in this part of Serbia, an area of extraordinary beauty and a unique natural ecosystem. This peat is a home of some endangered fish and plant species and in whole a home of more than 250 types of species. Urgent protection is necessary.

Table 3 – Final results of using GAM model on the geosites

Geosite	*Main values (VSe + Vsa + VPr)*	*Additional values (VFn + VTr)*	*Field*
GS_1	2.5 + 3 + 3.5 = 9	1.5 + 1.75 = 3.25	Z_{31}
GS_2	2.75 + 2 + 2.25 = 7	1.5 + 0.75 = 2.25	Z_{21}
GS_3	2.75 + 2 + 2.25 = 7	0.75 + 0.75 = 1.5	Z_{21}
GS_4	2.5 + 2.75 + 2 = 7.25	1 + 0.75 = 1.75	Z_{21}
GS_5	2.75 + 3 + 3.25 = 9	3 + 2.75 = 5.75	Z_{32}
GS_6	1.5 + 1.75 + 2.5 = 5.75	1.25 + 0.75 = 2	Z_{21}
GS_7	1.5 + 2.25 + 2.75 = 6.5	1.75 + 0.75 = 2.5	Z_{21}
GS_8	1.25 + 2.5 + 2 = 5.75	2.75 + 2.5 = 5.25	Z_{22}

As for the additional values, the situation is worse then when it come to the main values. The existence of traffic and tourist infrastructure is an imperative to any mean of tourism. The traffic network in the area of the Nišava river midstream valley is not at the suitable level.

The territory investigated gravitates towards the emitive centers, such as: Niš, Pirot, Leskovac but also Vranje, Kragujevac and Beograd. Improtant international and national roads, such as E-75 and Coridor X, go through or near this area, which provides easy access to the sites. But, the access to the very sites is pretty hard and unsecured. Some of the sites aren't available by any kind of vehicles, only on foot. Also, the paths aren't marked, which makes the localities more unaccessable.

In most of the cases, the sites don't have tourist infrastructure. In most of the cases there is an info board which notes the name and the protection category of the site (if protected).

After the scores are given (Table 3), each of the geosites are distributed in a certain field (according to the scores) (Figure 3). Thus, as can be seen from the table, the best rated site is Sićevačka klisura, which is deployed in the field Z_{32}. The lowest ranked site is a Sinkhole under Trem, which received the lowest scores in the evaluation process.

Figure 3 shows a graph with the positions of all geosites. It is evident that the fields Z_{32} and Z_{33} are the best fields, with the best prospects for tourism development, and that one should consider the geosites located within these fields. Of course, this does not mean that the sites ranked poorly cannot be of concern to the management in the planning process of tourism development, but it means that these sites require more effort, especially funds for geotourism training.

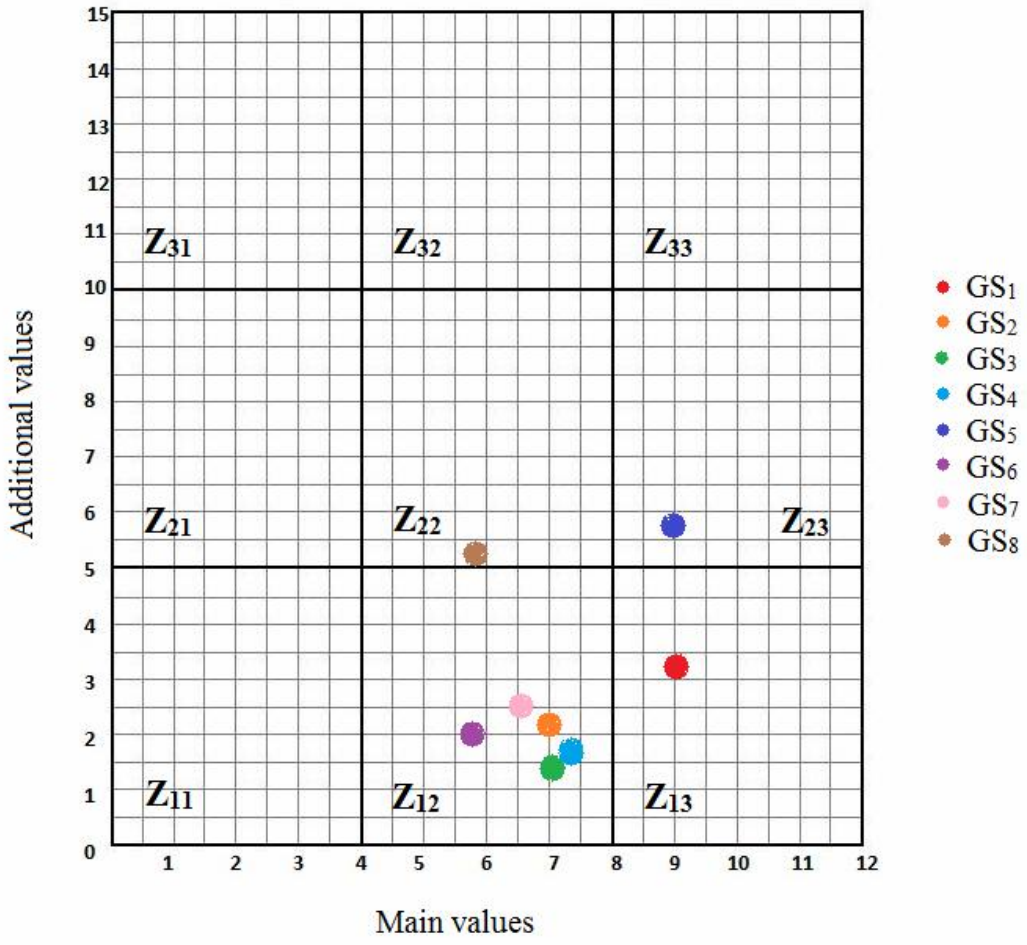

Figure 3 - Disposition of geosites according to GAM model
(Source: author)

As it is evident from the table, the highest value is obtained by geosite Sićevačka klisura, which score put it on Z_{32} field which means this geosite has high level of main values, firstly scientific, and middle level of additional values, represented by tourism development at on location. Namely, even though the tourism practiced is mostly excursion tourism, this is the most developed geosite in this area.

On the other side, geosite near Toponica river, has the lowest score, that tells us that tourism on this geosite isn't developed, even though there is a possibility for tourism development.

Other geosites stand on Z_{21} field, except for Krupačko vrelo and Krupačko jezero. The first geosite has extraordinary prepositions for development, because of its high score in the fiels of representativness and the significance, arrangement and protection status, and the second geosite is special, because tourism in this area isn't developed, but there is tourism infrastructure, and there is a possibility to adjust this geosite to tourism visits with some minor modifications.

After all the geosites are being analysed, it is possible to get a clear picture about which of the gesites could attract tourists attention in the future. However, despite the highest marks considering the Main values, some of the geosites can't be interesting for the geotourists. This is because sometimes, the existence of the scientific, educative or ecological values isn't enough of a motive to attract tourist, even if it is interesting for the scientists.

We can conclude that the geosites that have high Additional values could be interesting tourist geodestinations in future. Due to the adverse financial situation, it is not possible to talk about large projects nor plans for geotourism development in this area. That is why it is most cost-effective to use the existing touristic infrastructure and with the minimal alterations (ecological and financial) to adjust the space for geotourism. This would be the easiest to achieve in Sićevačka klisura, where we can find some tourist activities.

Furthermore, regulation status of landscape protection is mandatory, in order to avoid further degradation. Among the most vulnerable are karst landforms in Jelašnička klisura, which due to intensive use (by climbers), are in danger of collapse and permanent destruction. Obtaining a certain level of protection at the state level, the actions that are permitted are regulated.

For any further development of a tourist destination, funds are necessary, but which lack in this area. One of the solutions could be privatization, foreign investments or cross border cooperations.

4. FINAL CONSIDERATIONS

As mentioned, Sićevačka klisura (GS_5) gained the highest score in Table 3. As the only unit that is complete with infrastructure and accessible, it also homes a variety of endangered and rare species. Also, Sićevačka klisura is rich with various geosites interesting and accessible for potential geotourists. Besides this, Sićevačka klisura is a home of many monasteries, hydro power plants, archaeological sites, that could only complete the creation of a unique geotoruism product enriched with cultural treasure. Krupačko vrelo (GS_1) also gained high score in this table, because of its accessibility and infrastructure. After its conservation and planned protection, it could be a potential geotourism destination.

The lowest score was obtained by most of the other geosites (GS_2, GS_3, GS_4, GS_6, GS_7). Besides their value as rarities, the sites aren't properly organized nor protected the way they should be in order to preserve the rarities they are. First step is definitely preservation of the sites, and then recognizing them as a potential geotourism destinations.

Besides many geomorphological formations, numerous historical monuments that represent additional value, in the combination with natural sites Nišava river midstream valley surely presents a high quality and a high potential for tourism development. It is necessary to put some major effort and large funds so the area of Nišava river midstream valley could be affirmed the way it should be.

In the future it is necessary to prevent significant changes in the geographic space, which could harm the aesthetic components of the landscape, while at the same time there is the need to adapt this area for the potential geotourists. However, as geotourism is a part of sustainable tourism we can conclude that the development of geotourism could only facilitate the preservation of the original features of the landscape.

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