



GORGES IN THE MUNICIPALITY OF PIROT AS A POTENTIAL FOR GEOTOURISM DEVELOPMENT IN SOUTH-EAST SERBIA

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Abstract:

Since the late 18th century, canyons and gorges have become popular tourism destinations. This trend continues to the modern days, with a large number of people visiting these popular sites each year. In recent years, there has been a rapid expansion of tourism interest in such geological formations and landscapes. Due to that, geoheritage has become an important part of tourist offer in many countries. Serbia possesses approximately 650 distinctive geosites. Among these are several remarkable canyons and gorges of great scientific importance and geotourism potential. This paper shows the comparative analysis of tourism potentials of gorges and canyons in the municipality of Pirot, as an important growth engine of the area. Six gorges and canyons are considered, whose values are examined for the purpose of obtaining information on tourism potential, or more precisely, a certain degree of tourism aspects in the given area. Results show that there is certain potential for development of geotourism, in terms of the existence of exceptional geological diversity, and primarily scientific, followed by educational and aesthetic values. On the other hand, the added value would enable development of geotourism since tourism infrastructure is not satisfactory or is completely absent.

Key words:

Pirot Municipality, gorges, canyons, geotourism potentials.

1. INTRODUCTION

Invented by Hose (1995), geotourism is a form of special interest tourism and it focuses on geology and landscape formation leading to a debate as to how geotourism can be used as a tool for sustainable development, especially in the developing countries. Geotourism has become popular in some tourism circles, the perceived novelty and persuasiveness of the idea of geotourism derives from the quest for sustainable tourism development with a primary focus on experiencing the Earth's geological features (Dowling & Newsome, 2006; Newsome & Dowling, 2010).

Since the late 18th century, canyons and gorges have become very popular tourist destinations. This trend continues to the present day, when a large number of people visit these popular sites each year. The tourism potential of gorges has already been analyzed in numerous papers by several authors such as Cocean (1984, 1988), Ciangă (2001), Cocean (2011, 2013).

Places like the Grand Canyon (USA), Antelope Canyon (USA), Verdon Gorge (France), Samaria Gorge (Crete), Three Gorges (China), Vintgar Gorge (Slovenia) and Tara Canyon (Montenegro) are certainly among the most popular modern geotourism attractions. Gorges are, by definition, interesting landforms with the appearance positively perceived by the majority of tourists and certainly, the desideratum is to include as many gorges as possible in the regional tourist offer of the municipality of Pirot.

Serbia represents one of those countries that have not yet differentiated themselves on the world tourism map. Its rich geodiversity lies in the fact that it possesses approximately 650 distinctive geo-sites. Among these sites there are several remarkable canyons and gorges of great scientific importance and geotourism potential. They are very attractive and as such inspire awe and raise the adrenaline level of unexpected travelers, hikers and others.

The subject of this paper is a comparative analysis of gorges and canyons, which are seen as geo-sites related to the development of geo-tourism in the municipality of Pirot, in order to provide a clearer overview of the values of geosites.

2. STUDY AREA

The municipality of Pirot is located in the center of the Balkans, halfway between Niš and Sofia. By the size of its area, it is one of the largest municipalities in Serbia, while the town itself is situated in the valley of the Nišava River. The area itself is surrounded by Stara Planina (Mountain Stara) with its highest peak Midžor at 2169 meters above sea level, which is located on the territory of Pirot municipality as well as the edges of Vlaška and Suva mountains.

The old Roman road known as Via Militaris (military road) was constructed and used to pass through this area, later called the Empress's road, in the Ottoman era, only confirms the historical importance of Pirot Municipality location.

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Gorges and canyons represent a particular type of natural attractions in this area. Gorges and canyons are characterized by specific microclimate with small variations in temperature and are considered, in terms of climate change, to be the places where the largest number of species could survive. There are theories according to which many surviving species spread throughout Europe due to a large number of canyons in the Balkans.

Particularly interesting gorges and canyons, which are also the monuments of nature in this area, are the canyon of the Temštica river, Vladikina Ploča gorge, the gorge of the Rosomačka river or and the gorge of the river Gradašnička.

Certainly the most attractive gorge in this part of Pirot municipality is **Temštica river** gorge, or as the locals call it "The Little Colorado". Temštica river canyon is located in the southeastern part of Serbia. Formed by the river Temštica, which occurs near the village Dopli Do, by merging of five surface flows which flow down from the peaks of Stara Planina. Temštica carved a canyon valley, in the red rocks, and that is why the locals call it "The Little Colorado". The river Temštica runs through the gorge, creating cuts and steep cliffs that are in some places more than 200 m high. Pilj waterfall (or Pilj) is the second largest waterfall in Serbia with its 64 m altitude. The waterfall consists of two cascades "Upper Pilj" and "Lower Pilj". It is situated at an altitude of about 1450 m. The waterfall at the bottom forms a large vortex. The waterfalls Čunguljski skok and Kurtulski skok are located nearby.

As regards anthropogenic tourist values, one can mention the church dedicated to Holy Mother Paraskeva, built in the late 19th and early 20th century in the village Temštica and monastery Temska, with a church dedicated to the Holy Martyr George.

Vladikine Ploče canyon is located on the Visočica River in south-eastern Serbia into the massif of Balkan Mt. in Serbia. The Visočica river cuts into the limestone massif the canyon called Vladikina Ploča, its biggest and most famous canyon on this river. The canyon is 2,5 km from the village Rsovci (Stara planina). It spreads to Pakleštica village and the banks of Zavoj Lake. The longest and the deepest part of the canyon is more than 200 m deep, with vertical and pretty steep and inaccessible sides. The canyon is rich in flora and fauna. The canyon and the unique cave Vladikine ploče is marked by a hiking signalization from Rsovci village to Plakleštica village and it is possible to reach only on foot. In this part of Stara planina, through the canyon Vladikine Ploče, rafting Vladikine ploče is being held (Mitić, 2006).

The canyon has very steep cliffs that are inaccessible and several hundred meters high. All through its flow there is trout, chub and brook barbell, and the conditions for fly fishing are excellent. In this region, there are several caves that can be observed above the river bed at the height of 86 m. This cave system is interesting for the remains which suggest that prehistoric man lived there.

Rosomačka river (also known as Rosomačko grlo and Slavinjsko grlo) canyon was created by the river Rosomača, which belongs to the river Visočica basin and it spreads between the villages Rosomač and Slavinja. It is cut into layered limestone of jurassic ages. The gorge is interesting by its so-called pots. Those are evorsion pots, hollows, made by characteristic process of vertical fluvial erosion. They are

located at the places where the river suddenly descend to the riverbed from the cascades, so because of the great kinetic energy of water comes to the immersion of the riverbed right after the cascades. The width of these hollows can be up to 4 m in diameter. The gorge can be reached by feet, and at the entrance of the gorge one can see extremely attractive rarity which is in one its parts extremely steep and inaccessible; the characteristic of this gorge are little hollows, pots – whirlpools, which make this gorge even more beautiful. If you want to pass through one part of the canyon, it is possible only through water (JP Srbijašume, 2005).

Gradašnica river gorge is located 4 km near village Gradašnica. It is a very attractive gorge and more than 1 km long. It has extreme and stiff canyon cuts. In the gorge, there is a Dag Banjica (thermal-mineral spring), near Pirot. Thermal mineral water spring Dag Banjica in the beautiful canyon of the Gradašnička River, with a constant water temperature of 29 degrees, does not lack visitors even in cold days.

3. METHODOLOGY

The basis for an efficient strategy should be the selection of most suitable resources for development of geotourism in the Municipality of Pirot. Such an inventory is necessary, especially if considering that the main tourism resources of the area, both natural and anthropogenic, come in a wide range of forms and elements. All of these features are certainly interesting, but still, not all of them have the same attractiveness.

Thus, a tourism typology of gorges has been developed using the three key parameters:

- ◆ Intrinsic attractiveness,
- ◆ Opportunities given by the position of the gorge,
- ◆ Possibilities for carrying out various tourism forms and activities (Cocean, 2014).

Some important aspects were considered when estimating the intrinsic attractiveness of a gorge: interesting physiognomy given by the sinuous profile or various types of rimstone pools, towers, pillars *etc.*; richness in microforms, such as caves, karst springs, sinkholes, waterfalls and the presence of some famous landmarks among them; the preservation of some proofs of an intriguing evolutionary scenario that are easily identifiable by tourists.

In order to determine the opportunities provided by the position of gorges, their location in relation to the main roads and settlements was analyzed.

Location of gorges on possible tourist routes was also taken into consideration. If a tourism resource is situated on an alternative tourist route that would eventually return to the main access road, tourists will be tempted to make a detour in order to see it. However, the situation is quite different if a similar tourism resource is situated at a dead end, where the tourist has to travel both ways, to and from the gorge on the same road.

A second issue must be addressed: the distance from other tourist attractions. Priority has been given to those gorges located into gorge complexes. The closeness to major urban centers is also relevant, because tourists coming from neighboring cities represent the highest percentage of weekend visitors.



The third classification criterion, represented by the possible types of tourism, aims at identifying those gorges that can attract a greater number of tourists.

4. RESULTS AND DISCUSSION - GEOTOURISM PERSPECTIVE IN PIROT MUNICIPALITY

In the past several years, canyoning has become increasingly popular. In the world, it has long ago developed into an extreme sport which includes conquering a canyon and all obstacles that may be encountered: waterfalls, rivers, cascades, caves *etc.* It includes swimming, climbing, walking and routing through very narrow gaps. Depending on the severity of the canyon, climbing gear and neoprene suits may be used. With the help of experienced guides, the easier canyons can be won by the beginners.

As noted in the previous section, analysis of tourism potential of canyons and gorges in Pirot municipality was based on three main criteria: attractiveness, in which we evaluated the scientific, educational, aesthetic value of the cliffs or canyons, as well as the degree of protection, and the ability to minimize any form of degradation. In this regard, each of these cliffs and canyons has a distinct value, and we can say that it is extremely attractive. The rivers cut the streams through different geological formations, mainly limestones of different ages. While emphasizing their scientific and educational importance in order to have a clearer understanding of geological diversity of Southeast Serbia, and added value, above all, natural, complete aesthetic component. For example, below Zavoj lake, in the village Mrtvi Most, Visočica confluences river Temštica. On 1963. on Visočica, above Zavoj village natural avalanche occurred. This caused the appearance of Zavoj lake, the only of its kind in Serbia (formed by a colluvial process). Natural dam was formed as a consequence of heavy rains in the spring of 1963. The slopes of Stara planina started to slide down which forced a large amount of Earth to partition the river. This phenomenon is a true rarity and is a great example for explaining certain geo-morphological processes to a wider audience and may represent an outstanding tourist site.

Considering that the landscapes are mostly inaccessible, the possibility of anthropogenic degradation is minimal. However, if we make a comparison, we can conclude that among the above and according to this criterion, the most attractive gorge is Rosomačka gorge, primarily due to its uniqueness and rarity.

Furthermore, when considering the opportunities provided by gorges and canyons for tourism development, depending on their geographical location, namely the location, it is concluded that all the gorges are extremely inaccessible, and that the road network is insufficiently developed to meet the demands of massive tourism vision of this region. All the cliffs or canyons are accessible by hiking trails, which are sometimes several kilometers long and usually start from the nearby villages. However, the villages can be reached by certain means of transport, rarely by tourist buses due to the lack of good quality road network and parking.

The third criterion means the possibility for development of different forms of tourism. Most of the gorges and canyons have so far been the favorite place for adventurers, hikers, so we can only talk about tourism of special inter-

ests. Excursions, as well as mass tourism are not yet attractive in any of the gorges/canyons due to several reasons, but primarily because there is no adequate infrastructure. This problem could be successfully solved through the engagement of local residents, which could help revitalization of rural settlements, as well as solving the problem of depopulation in these regions.

5. SUMMARY

On the whole, based on the findings, it can be concluded that geo-tourism concept is an opportunity for rural development that can offer prospects for reducing poverty through engaging local communities in geo-tourism activities.

Clearly, it was pointed out that the attractiveness of the observed gorges and canyons is extremely large. Some of them represent a real phenomenon and excellent examples to explain certain geo-morphological processes to a wider audience.

On the other hand, it was estimated that the tourist infrastructure does not meet the basic requirements, and thus, it is almost impossible to talk about organized visits to these sites. In the future, we expect more financial investment in these sites, and greater involvement of local residents.

As this paper reveals, all the gorges/canyons have certain potential. Therefore, the potential geo-tourists have a lot to see and experience, but it is necessary to enrich tourist offer and to make it stand out from others, so that geo-tourists could find it interesting.

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