

Canyons of Albania and geotourism development

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Abstract

Canyons are among the most interesting geosites created by the erosive activity of the rivers, processes of weathering and erosion or tectonic activity and are distinguished for the aesthetic beauty of the shapes, the labyrinths of the valleys, the steepness of the slopes, the greatness of vertical walls, waterfalls, caves, etc., bearing high scientific, educational and touristic values. Albania has a considerable number of canyons due to the presence of a rich river network flowing through the variety of geological formations and tectonic faults. Outstanding are the well-formed canyons in limestone rocks with almost vertical walls such as Gradec canyon in Çorovoda, Lëngarica canyon in Përmet, Grunas canyon in Theth, etc. The only canyons which are formed on magmatic rocks are the canyons of Devoll. For their values, the most interesting canyons are included in the list of nature monuments as geomonuments. The most magnificent and frequented canyons for tourism in Albania are the Osum canyons, Gradec canyon, Lëngarica canyon and Nivica canyon. These distant impressing landforms, once forgotten and unexplored, are now attracting the attention of many tourists either for admiring their natural scenery, hiking and rafting or for curative tourism. However, despite their values the canyons are not enough known due to lack of information or poor promotion. Filling this gap has served this study where the geotouristic potential of the canyons is evaluated according to four criteria of Knapik et al. such as accessibility, state of preservation, scientific value and education value (Solarska and Jary, 2010). The database of the canyons is organized in an inventory card which contains general and specific data of each geosite. The final product of this project will be a website that will inform the public and promote the values of the canyons of Albania.

Keywords: canyons, Albania, evaluation, geotourism

INTRODUCTION

According to National Geographic Society (2015), geotourism is defined as a tourism that sustains or enhances the geographical character of a place, its environment, culture, aesthetics, heritage, and the well-being of its residents. This means that geotourism is a multifaceted sustainable tourism centered on the conservation of geoheritage, appreciating its geological creation through learning and enrichment of the economy (Swarnal et al., 2013). Canyons geosites, especially Osum canyons, in a way have initiated geotourism development in Albania, mainly for their scenic landscape and water sports.

Geotourism is bringing tourists in less developed areas, generating new jobs and revenues for local population and contributing to the sustainable development of the region and decrease of the migration level. The local population living in the rural villages nearby, are re-evaluating the presence of these wonders of the nature, and are investing or shifting their activities to support geotourism development.

The promotion of the touristic values of these geomonuments and their declaration as protected sites increased the interest of tourists to visit them. Their scenery and water sports have attracted many tourists, whose number is continuously increasing, and travel agencies are including the main

canyons in their tours. Geotourism development in the areas of the canyons is resulting also into the creation of the touristic infrastructure, promotion of the natural and cultural heritage of the areas nearby, increase of the employment in the tourism industry, increase of the land price, development of the local bio products, etc. However, there is still a great need to highlight the canyons and include them in the touristic map of Albania. Most of the visitors come to explore the unknown mysteries of the canyons, but they are not properly informed where to go and what values the geosites possess. Therefore, canyons of Albania with scientific, educative and touristic values, need to be valorised, preserved and promoted not only to encourage their frequentation but also to support their conservation.

VALORIZATION OF THE GEOTOURISM POTENTIAL OF THE CANYONS

Geomonuments are natural monuments with particular aesthetic, ecological and touristic values, which are protected by law being classified in the third category of nature monuments of IUCN. Thanks to the efforts of geologists, geographers, ProGEO Albania members, etc., 291 geosites of Albania, or 41% of the nature monuments, are listed in this category of protected areas. In this list, 22 canyons are included as geomonuments with geological, geomorphological and biological values (Fig. 1).

To determine the geotouristic potential of individual canyon, the methodology of Knapik et al. is applied where each of four criteria is assessed based on five features with values of points from 1-5 for the accessibility and state of preservation and from 2-10 for the scientific and education criteria (Tab. 1). The four criteria assessment of Knapik et al. allows making a statement of every object's significance for

their geotouristic and educational functions (Solarska & Zdzisław, 2010). This evaluation ranks the canyons based on their touristic potential and enriches the database of canyons, and it helps to create tour itineraries based on the touristic potential and visitor expectations.

The results of valorization proved the existence of a significant geotouristic potential of the canyons, where nine of the 22 evaluated canyons resulted with highest potential for geotourism (Tab. 2). These canyons with high values, even regional ones, such as Osum canyons, Gradec canyon and Lëngarica canyon, are significant for their aesthetic beauty and variety of landforms as testimonies of the geomorphologic processes, weathering and erosion, and tectonic activity.

They offer possibilities for diverse activities such as rafting, climbing, bird watching, curative tourism, and some of them are easily accessible or relatively good roads to reach them exist. All of them are well preserved sites with no visible signs of degradation, thanks to their location in far away or difficult terrain. They have multi educational values such as understanding the geology of the area, geomorphological evolution of the structures, weathering and erosive processes, biodiversity of special habitats, etc., and can be considered as open books to read the story of the earth.

They are reachable in most parts of them, for they are either situated direct on the road trail or the distances are not too far. Some of them are within national parks and if included in the tourism packages, they will add values of the tours that have the park as the main destination.

Although the number of the visitors to the canyons is increasing continuously, geotourism development in these areas requires the provision of the basic facilities to the visitors, which in most of them are missing except Osum canyon. Information boards, maps, leaflets, road trails, panorama viewpoints, etc., lack almost for all of them.

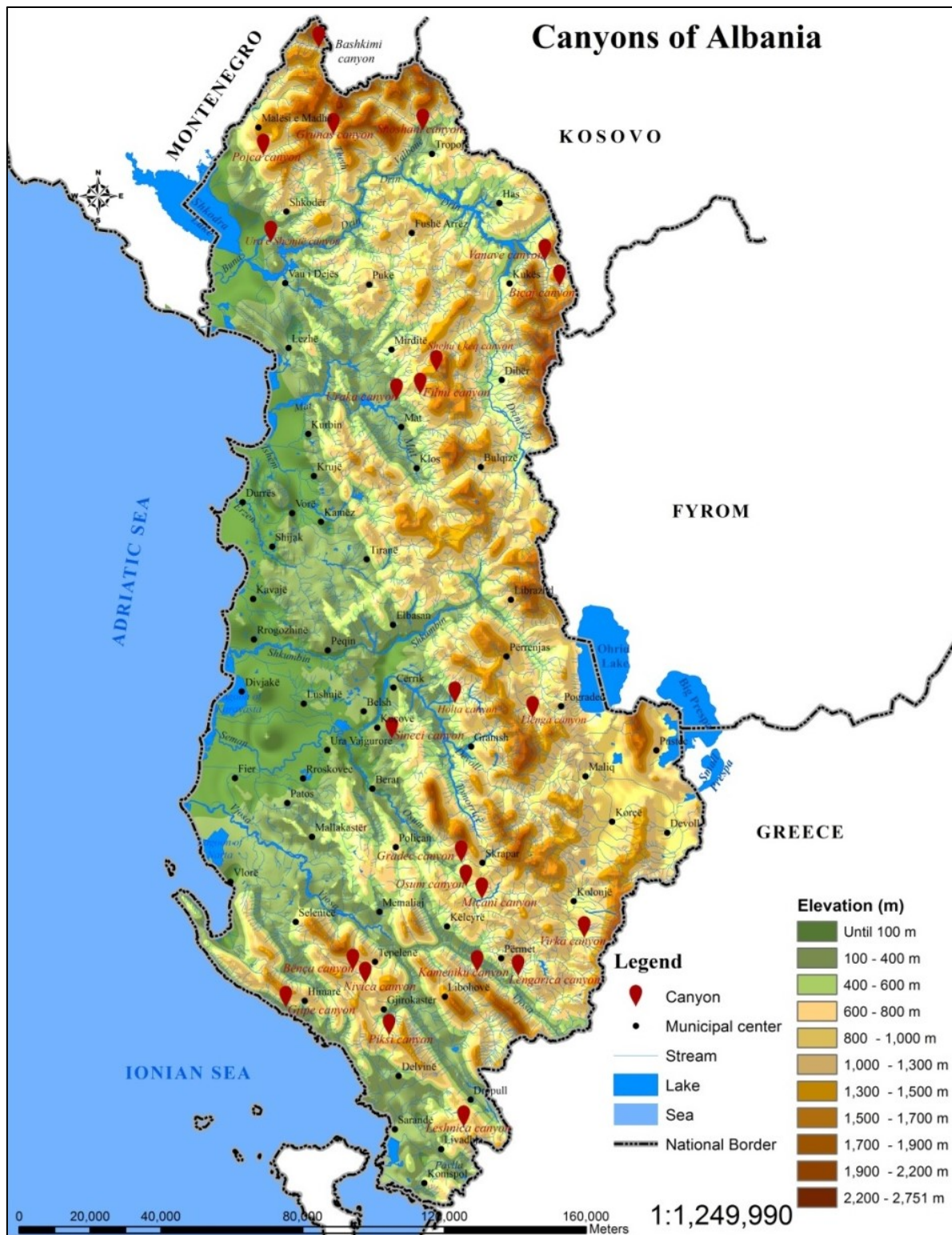


Fig. 1 Location of canyons in Albania

Lëngarica canyon (Përmet)

Lëngarica river originates close to Kamnik village of Kolonja, where Shalë and Barmash streams join, flowing through an area with different lithology and structure creating narrow and deep landscapes in limestones and wide valleys in terrigenes. After joining its right

branch, Gostivisht, this river flows southwest cutting the anticline structure of Lëngarica. Here this river has shaped the canyon of Lëngarica (Fig. 2) with deep and vertical slopes of 80-100m, where the bottom width mostly is 1,5-2 m in a length of 3 km. The canyon and the waterfall of Lëngarica are situated close to Petra

Tab. 1 Criteria of assessment for inventoried geomonuments (according to Knapik, et al., 2009, modified by Solarska and Jary, 2010)

Criteria	Traits	Points
Accessibility	Site clearly visible, located directly on the touristic trail or nature's path	5
	Site clearly visible, located on the road or path	4
	Site barely visible, located more than 250 m away from the path or road	3
	Site difficult to access for tourist (ex. significantly overgrown or difficult to access)	2
	Site unavailable for tourists	1
State of preservation	Well preserved site with no visible signs of degradation	5
	Site in slight violation of its structure	4
	Partially destroyed	3
	Site heavily modified by human	2
	Site destroyed - loss character of geosites	1
Scientific worth	Very high: one site in the region, unique in a wider scale	10
	High: very important for regional studies	8
	Average: significant for regional research	6
	Low: common site with average values	4
	Very low: no particular distinctive features	2
Education	Very high: number of represented issues: 5 and more	10
	High: number of represented issues: 4	8
	Average: number of represented issues: 3	6
	Low: number of represented issues: 2	4
	Very low: number of represented issues: 1	2

Tab. 2 Valorization of canyons

Nr.	Geosite	Criteria				
		Accessibility	State of preservation	Scientific values	Education	Summarised value
1	Osum canyon	5	5	8	8	26
2	Gradec canyon	3	5	8	8	24
3	Lëngarica canyon	3	5	8	8	24
4	Bënca and Nivica	3	5	8	6	22
5	Grunasi canyon	4	5	4	6	19
6	Shoshani canyon	5	5	4	4	18
7	Sineci canyon	3	5	6	4	18
8	Holta canyon	3	5	6	4	18
9	Gjipe canyon	4	5	4	4	17

village, along the downstream of the Lëngarica river, at 400 m altitude.

The slopes of both sides of the canyon are very close to each other, even meeting in some spots and forming tunnels. The canyon is hardly passable in whole its length due to several deep thresholds, escalates, underground tunnels or holes. Several caves and cavities on the slopes of the canyon are connected through tunnels or galleries, where the most attractive is the cave of Pëllumbi known as a prehistoric cave according to the archaeological findings (Academy of

Sciences of Albania, 1991). At the exit of the canyon many thermal waters of Bënja sprung in both sides of the valley whose temperature reach up to 30°C. The canyon, thermal waters, the forest, caves as well as the monuments of culture such as Old Bridge of Katiu and church of Bënja, are being frequented all over the year by the tourists but especially during the spring and summer season for rafting in some parts. Lëngarica canyon for its complex of values, karstic forms, waterfall, caves, etc., has international and regional values.



Fig. 2 Lëngarica canyon (Photo: Joni Margjeka)

Shoshani canyon (Valbonë)

Shoshani canyon (Fig. 3) is right down the bridge with the same name, starting close to Shoshan village and stretching westward for around 1,1 km long. Valbona river has eroded the limestone rocks of Mesozoic creating the canyon, whose slopes on both sides are almost vertical (70-90°) (Neziraj et al., 2016) reaching 30-40 m deep and 2-5 wide, but even less than 1m in some parts. The narrow distance of the riverbed bottom and the blue color of the river, which sometimes is white due to melting snow, can be admired from the bridge. Anyone going to the National Park of Valbona can stop to see the canyon on the road trail, or can go for hiking in the valley leading to the valley of Dragobia and the valley of Valbona upstream river, surrounded always by the giant mountains and peaks of Jezerca, Maja e Hekurave, etc. Those who dare can enjoy rafting in some parts of the canyon following the windings of the flow, admiring the vegetation in both sides and listening to the sound of the flowing water of the river.

GEOINFORMATION OF THE CANYONS

Geoinformation of the canyons of Albania created with the help of ArcGIS10.5, is a digital database about each geosite, where general and specific data about geographical position, geology, geomorphology, biodiversity, state of preservation, management, etc., are provided (Fig. 4). Following the approach proposed by Giardino and Mortara (2004) to each geosite an inventory card containing pictures and descriptions divided in sections is created. The general data of the canyon is presented in the first section; pictures and text in the second, cultural values, curiosities and legends in the third section and state of preservation and risks in the last one. The inventory cards needs to be completed with further information about geology and geomorphologic evolution, stratigraphic sections, 3 D views, etc. The database completion is an ongoing process, for in many cases there is no updated data or the information is completely missing.



Fig. 3 Shoshani canyon (Photo: Joni Margjeka (left), Adil Neziraj (right))

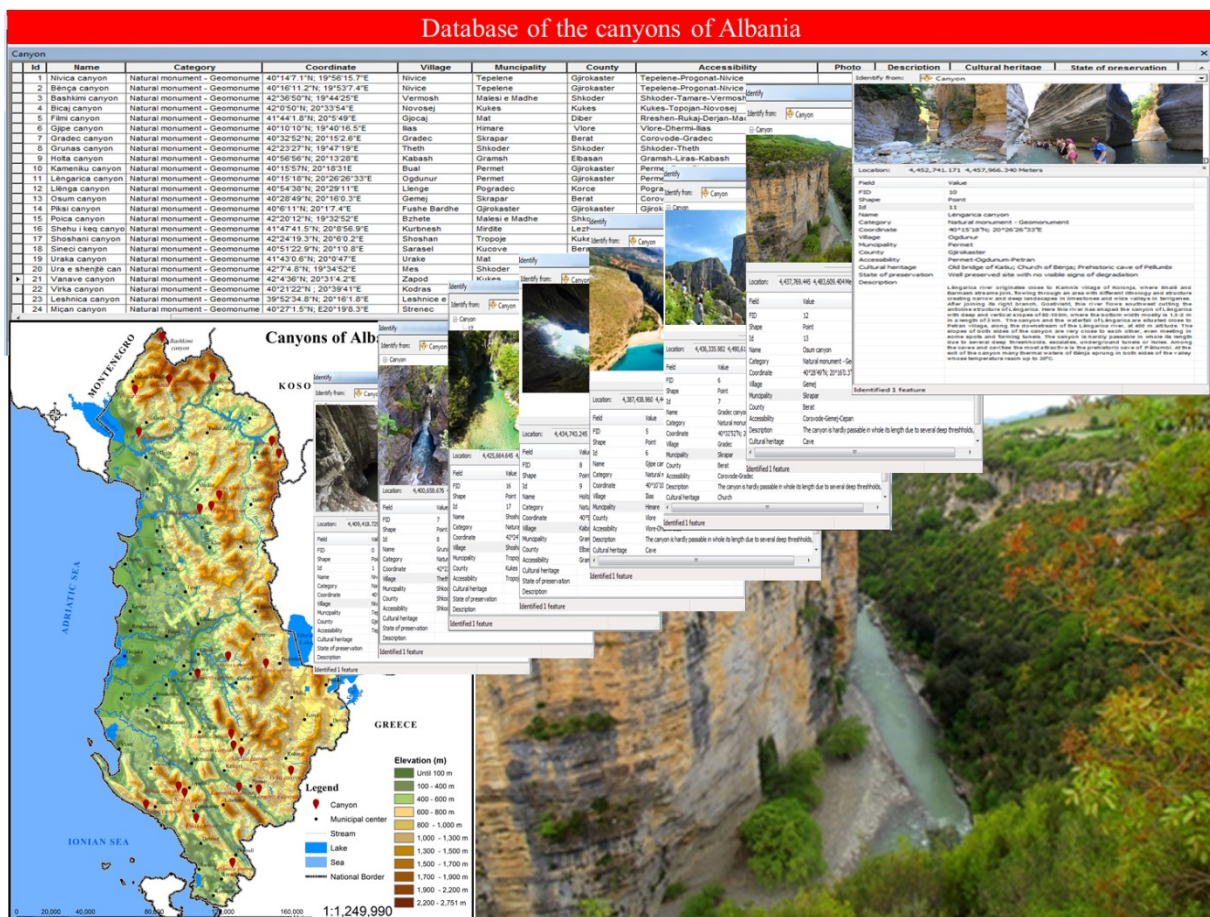


Fig. 4 The geoinformation database of the canyons in Albania

This gap needs to be filled through continuous monitoring of the geosites from the experts in the field of geology, geomorphology, biology, speleology,

archaeology, etc. In order to make available the information to the public are combined GIS applications with internet technology, allowing the publication of cartographical

data integrated with other information, including images and descriptive cards (Ghiraldi et al. 2009). Tourism would be better developed if the tourists would be informed and have access to digital information for the canyons. The geoinformation of the canyons of Albania will inform the tourists about these interesting landforms through the promotion of their touristic values. Therefore, the geoinformation for the whole canyons that are included in the list of the nature monuments is created. The geoinformation of the canyons can be updated as frequently as required based on new information and will be available to the public through the website www.canyonsofalbania.com.

CONCLUSIONS

Based on the valorization of the canyons, it can be concluded that nine of the nature monuments have high potential for geotourism development. The results of the canyon valorization realized by this study can be considered as initial step for the public awareness raise about the geosites importance. Geotours need to provide geological, geomorphological and biological knowledge to the visitors in order to raise their understanding of the area. Valorization of the canyons is the first step toward geoheritage cataloging. Much more is needed to be done for the information update, monitoring the state of the art of the canyons, completion of the database with more geological and geomorphological data, etc. The creation and publication of the website should be the next step where itineraries of geotours are proposed to the general public together with maps and other information.

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