NATURAL AND HUMAN POTENTIAL IN THE MUNICIPALITY OF SARANDA

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Abstract: The territory of the Municipality of Saranda, is characterized by diverse physical-geographical conditions, which enable human development. Urban development, constructions without criteria and damage to the natural environment are the main phenomena that continue to cause mass migration of the active population. The geographical area lies in the southern part of the Republic of Albania and consequently stands out for a typical Mediterranean climate, which creates optimal conditions for the cultivation of subtropical crops, such as citrus, olive groves and viticulture. Within the territory lies the Butrint National Park, which contains extraordinary ecological and biological values. Butrint Lake is presented with dual lake and lagoon origin, being characterized by hydrological parameters very important for the growth of different species of fish and mussels. This great resource has created opportunities for the intensification of the fisheries and aquaculture sector within Butrint Lake and in the waters of the Ionian Sea. In the context of very complex tectonics, the anticlinal geological structures of Saranda and Bogaz are distinguished, consisting mainly of limestone and flysch, on which the main hilly ridges are formed in the west and east of the territory. The history of the population of the area belongs to the Neolithic period, where the early settlement of Xarra is distinguished. During the Hellenistic period, the ancient city of Butrint was founded, which was populated by the Illyrian tribes and the Greek colonists. The civilization of Butrint preserved its values even during the Roman period and until the early Middle Ages, until the city finally lost its importance, while throughout the historical evolution, it was intensively subjected to very active seismic movements, resulting in the destruction of the ancient city. The early core of the city of Saranda was the ancient settlement of Onhesmos. The city of Saranda is the administrative center of the municipality and is the main port in the southern part of Albania. At the south of Saranda is the urban center of Ksamil, which was founded during 1974, with the aim of protecting itself from the threat of invasion by the Greek state. Ksamil throughout the period of evolution of urban development has had a generally agrarian function, where the population coming from all areas of Albania, was employed in the agricultural sector, mainly for planting subtropical crops along the hills near coasts of the Ionian Sea, which represented the main products for export. The main economic activity is agriculture and livestock, which have received intensive development, after the irrigation engineering of the Vurgu and Mursia swamps in the years 1959-1960. Great perspectives are the parameters of the coastline configuration for the development of balnear tourism, which has created conditions for the expansion of tourist accommodation infrastructure and the formation of narrow belts of artificial beaches along the rocky coasts. The western part of the municipality is a coastal area that offers sufficient potential for the development of tourism and employment of a large part of the local population.
Keywords: coast, ecosystem, turism, agriculture.

1. MATERIALS AND METHODS

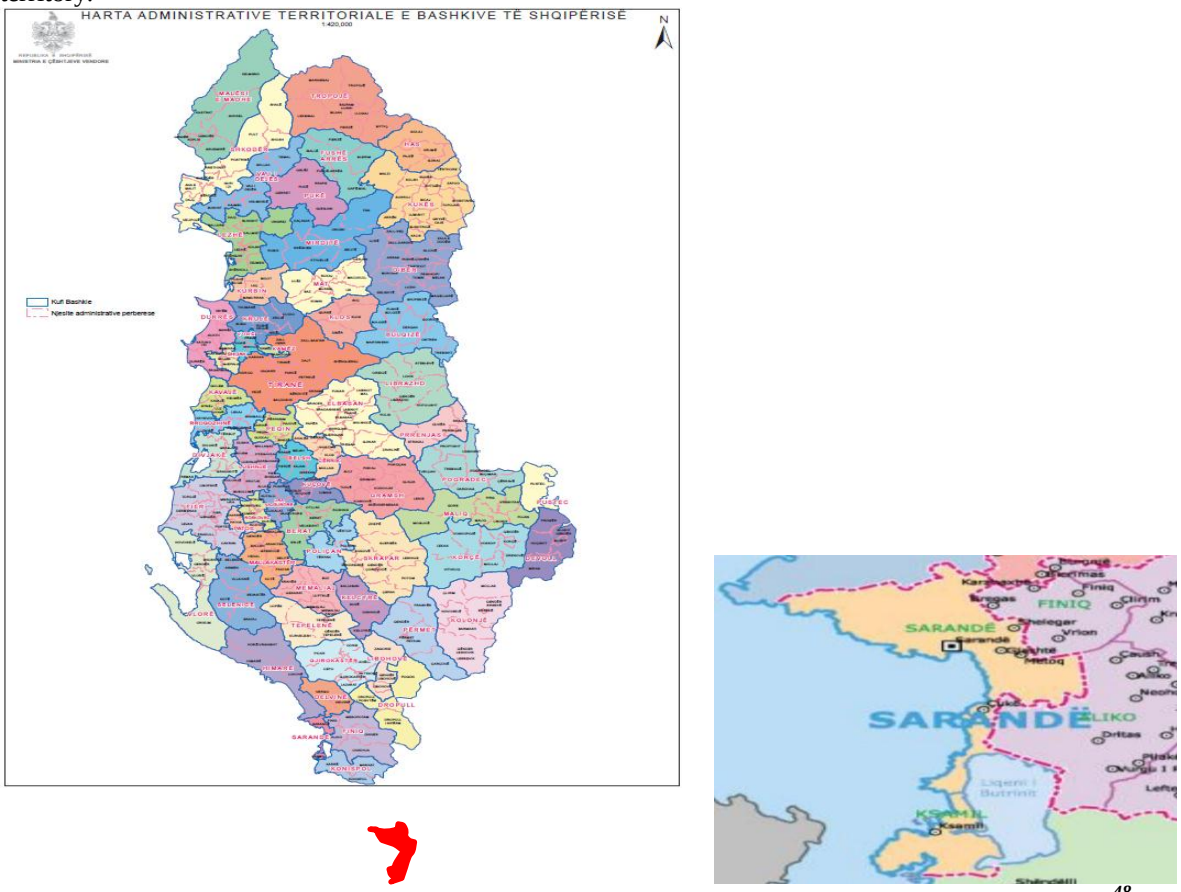
The first phase of the article preparation work is the collection and research of the necessary scientific literature and the use and collection of the nearest geographical information. The method of comparison has been used in the analysis of all natural and human components of the mountain ridges, which has helped us to clearly present the dynamics of relief development during morphotectonic and morphoclimatic evolution, as well as current and prospective phenomena.

2. GEOGRAPHICAL POSITION

Territory of Municipality of Saranda has an area of 58.96 km^2 and a population of about 50,680 inhabitants.[47]
In the north-western part it borders with the cape of Qefal, in the north with the watershed of Lasara, in the east with the valley of the river Kalasa and the plain of Vurg, in the southeast with the lake of Butrint, in the south with the channel of Vivar and the plain of Mursi, southwest with the bay of Butrint and west with the Strait of Corfu, along the Ionian Sea. The territory in the western part is distinguished for a mainly hilly relief, where the hilly ridge of Lasare and Eremec is distinguished, while in the east the relief is low mainly plain, due to the formation of the plain of Vurg on the graben structure of Delvina. The Ionian coast is characterized by a very pronounced meandering line, starting from the cape of Qefal to the cape of Ali Pasha. It consists of a variety of natural environments, ecosystems

[47] Municipality of Saranda. *Manual of demographic and economic development of the Municipality of Saranda*. (2018).

with scientific, economic, tourist values, as well as biological species and important human potential. The Ionian coast is distinguished for various forms of relief, such as capes, bays and a peninsula in the southern part of the territory.



Map.1. Geographical position of the territory of Albania and the Municipality of Saranda.[48]

3. GEOLOGICAL AND GEOMORPHOLOGICAL FEATURES

The relief of the peninsula is generally hilly and it is clearly distinguished by the prominent morphological and morphogenetic contrasts. Several factors have influenced to the process of relief formation such as abrasive marine activity, fault and fold tectonics, accompanied by marine transgressions and regressions, in particular the neo-tectonic differential movements during Plio-Quaternary, lithological content, carstic and masswasting phenomena, as well the temporal ravines streams. The hilly ridge is createdover the peninsula, on the monoclinal structure. The almost longitudinal direction northwest-southeast of the above geological structure is a direct reflection of the very active tectonic displacement, where the prominent asymmetry of the restrictive slopes is a direct consequence of the highly evident structure of asymmetry.In some fragments, the fall of limestone and molassic layers coincides with the fall of the relief slopes, particularly in the eastern part of the peninsula, leading to the formation of structural surfaces. The morphometric relief elements such as the inclination, shape and dimensions of the slope depend on the intensity of the tectonic lifting movements, a lithologic structure of almost fully calcareous composition, the prominent values of complicated folding and fault tectonics, as well as a typical of external modeling processes. The prominent values of the hypsometric dislevelling of the main features of the relief are facts a young age relief, where neotectonic vertical movements movements have been the main factor in the present morphological features of hilly ridge. The relief is mainly hilly, while some sectors in the east are of a flat character. The main hilly ridges are formed on limestone anticline structures. The coastal area and the interior of the territory is formed thanks to several physical-geographical factors. Marine transgression during the Pliocene-Quaternary geological period, active new and present detachment tectonics, mainly limestone geological construction, intensive karstic processes and the

[48] Collective authors. *Administrative map of the Republic of Albania.* Tirana (2015)

impact of the activity of the Bistrice and Kalasa rivers have influenced the relief formation and morphological features. The activity of subsidence tectonic movements, which has undergone the gravitational structure of Delvina, has led to the formation of the relief shape of the plain type with a generally more regular shape, in relation to the hilly boundary ridges. These ridges formed in anticline structures, accompanied by the presence of longitudinal and transverse local tectonic faults, are characterized by more irregular relief. In terms of morphological features, the Delvina plain is characterized by pronounced contrasts in relation to the hilly ridges to the west and northwest.[49] This is most evident at the northwestern end of the plain which is bordered by almost vertical slopes. The immediate changes of morphological elements between the plain and the ridges around it, are closely related to the dominance of the accumulation process, in terms of subsurface tectonic movements of the structure, on which the shape of the plain is formed, while on the contrary the sloping slopes of the plain, are subject to the morphological erosive activity of water flows, which belong to the river basin of Bistrica and Kalasa. Ksamil Islands are 4 small rocky islands with a total area of 8.9 ha, near the coast of Ksamil, south of the city of Saranda, which is the city closest to the Greek border. Islands were created during the Jurassic period as a result of the continent splitting. The largest island is about 5 ha and is located 60 meters from the shoreline; the second is 1.3 ha and 500 m from the shoreline; the other two islands are 1.1 ha and 0.8 ha respectively and look more like rocks coming out of the water than like real islands. They are covered by vegetation dominated by Mediterranean macchia.[50] Physical properties of bare carbonate rocks and vegetation which is poor in some sectors, affecting the values of temperature amplitude and air humidity. Complex relationships between landforms and the external environment were indicated. Geomorphic systems are often affected by episodic large events such as volcanic eruptions, glaciation, and megafloods which lead to a disturbance of system adjustment, sometimes in a catastrophic way. Also, responses of geomorphic systems to external changes tend to be nonlinear, including lag time, relaxation time, and thresholds.[51] Gravity, flowing water, and temperature changes are the main forces behind hillslope processes, with the action of animals and plants being important in some situations. In some parts of the world, similar features have been built to protect infrastructure from other types of mass wasting. Weathering on hillslopes, as elsewhere, includes the in situ conversion of bedrock into regolith and the subsequent chemical and mechanical transformation of regolith. Several hillslope processes serve to transport regolith and other weathering products. They range from slow and continual processes to rapid and intermittent processes. Splash processes into three categories: leaching, soil creep, and rainsplash and sheet wash. Rocks are subject to stress and gravitation.[52] The mass movement types, distribution and shapes are strongly controlled by both the lithological characteristics and the multi history structural setting. Active slow-moving landslides, commonly characterized by multiple and superimposed landslide bodies, confirming that the spatial distribution of the recent landslides is frequently influenced by the presence of older landslides. New mass movement of the river catchment represents a useful tool for territorial planning, and engineering-geological and environmental purposes in the study area. It is, also, the starting point for both quantitative landslide risk analyses and the design of the most appropriate risk mitigation measures.[53]

Photo. 1. Ksamil city and Jonian Sea. Hoxha.A.

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4. HYDROLOGIC ASSETS

The main rivers of the territory are Bistrica, Kalasa and Butrint lake. Bistrica originates from the northern sector of the Kazanja mountain at an absolute height of 1926m. The waters of Bistrica and Kalasa are distinguished for high transparency and low temperature, as well as for large amounts of water during the summer season, thanks to the supply of groundwater. The Kalasa River originates from the southern segment of the Gjeshnikoshi mountain at an absolute height of 1496m. In 1963, in the village of Krongji was built the dam of HEC Bistrica No.1, with a capacity of 22500kw, while through the diversion canal, the waters of Bistrica, pass to HEC Bistrica No.2, with a capacity of 5000kw, which was built in 1965. The high values of the water flow module, of Bistrica, are related to its food from the underground flow, proving that the geological basin is larger in area than the geographical catchment basin. In the Bistrica basin, due to the underground food, with the exception of the increase of water supply during the rainy season, the amount of inflows varies in small quantities, while in Kalasa they are greatly reduced. In the context of the distribution of water flow during the year, it results that the fluctuations of inflows in Bistrica and Kalasa, are in smaller values than in other rivers of the country. The minimum inflow should be analyzed through the flow of the dry period of the year and the average inflow of the driest month of the year.. The highest values of Bistrica mineralization are related to the longest path that passes through the groundwater, until they come to the surface.[54] Butrint Lake is a hydrological object with extraordinary values. The average depth in the lake is 14m. The amount of precipitation falls during the autumn and winter season, while about 6% falls in the summer season, proving the mediterranean character of the precipitation regime. Evaporation is one of the main elements of water balance with an impact on the dynamics and hydrological regime of the lake. During the evaporation process, it leaves the lake on average in an annual layer of 1260mm, where its largest amount occurs in the summer months, mainly in July and August. During the period May-October, about 945mm of water evaporates, or about 75% of the annual evaporation. The water level in the lake fluctuates during the time period, where 12-hour fluctuations are distinguished, which are caused due to the tidal process as well as seasonal fluctuations. The amplitude of these fluctuations is determined by the water level in the lake and the amplitude of the tidal wave, which undergo changes. In the autumn period, the cooling of the surface water layer spreads to a depth of 7-8m. The change in the amount of salinity is observed only in the upper layer, while in the lower layer below 7m, it changes almost throughout the year. In terms of spatial distribution, it turns out that the changes in salinity from one area to another are small, with the exception of the sector near the estuary of the Rreza canal, where salinity is lower than in the rest of Butrint Lake.[55]

5. DEMOGRAPHIC AND ECONOMIC DEVELOPMENT DURING THE TRANSITION PERIOD

According to the civil register on 2018 population of municipality of Saranda is 54,630 inhabitants. The new municipality has an area of 58.96 km^2. According to the civil registry, the population is 859.56 inhabitants/km^2. Under the jurisdiction of the municipality are five neighborhoods and three villages: Gjashta, Metoq and Shelegar. Saranda is known as an area with great emigration. It has a diverse ethnic and provincial composition. In 1927, Saranda had about 800 inhabitants, while almost ten years later it had 1800 inhabitants. In 1957 the city became the administrative center. From 1960 to 1982, the population of Saranda grew at an average annual rate of 2.7%. At that time the city of Saranda had about 15 thousand inhabitants and development was quite limited. In the years 1990-2004, the city experienced a pace of development and an increase in population, mainly due to the arrival of many families from different areas of Albania. In 1999 the population was 26,512 inhabitants. In the framework of the territorial reform, the Municipality of Saranda has undergone significant changes in its surface, territory and population, where the main feature is the unification of the territory of the administrative unit of Ksamil with it. The Municipality of Saranda consists of the cities of Saranda and the town of Ksamil as well as the villages of ÇukA, Metoq, Gjashta and Shelegar. After the changes as a result of the territorial reform, the municipality of Saranda is in a situation where it is foreseen an expansion of the existing territory as well as of the resident population. The city of Saranda has 36,500 inhabitants. Saranda is one of the main tourist destinations for Albania, therefore it is necessary to draft a clear vision on which to base the local tourism strategy. Strengthening the position of the municipality in the field of tourism in relation to other regional destinations, and establishing a fair relationship between competitiveness and complementarity is one of the most important points for which a strategic vision is needed. Intensive urban development has created the opportunity to place in the city a significant number of hotel structures which turn Saranda into one of the most important tourist destinations. Saranda polycentric protects and allows good management and valorization of natural resources as well as agricultural lands. In support of the idea of

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polycentrism, the green belt of Saranda will be created in the coming years, which will limit the spread of settlements and will increase the green capacity of the Municipality and the entire tourist area. The economy will rely on its development by promoting tourism and agriculture. The accessibility of local products in the regional markets will be increased and it will be ensured that they can be promoted without being alienated, through tourism.[56] Tourism is the most important sector of the local economy. Butrint Archaeological Site is an attractive destination for individual visitors or groups. In the last year alone, the Butrint National Park has registered approximately 100,000 domestic and foreign tourists. Ecotourism is another developing activity, which focuses on bird watching, flora observation trips as well as organizing guided guided excursions. After Saranda, Ksamil offers a sustainable tourism infrastructure, thus becoming an alternative resort for domestic and foreign tourists. Increasing agricultural production and increasing livestock, mainly small livestock, although to a lesser extent than in the past, still remains an important activity of the local economy. Cereals, olives, citrus fruits, vegetables and vineyards are the main agricultural products of the region, which are cultivated in the Vurg plain. The flat northern and southern areas of the coastal lagoon are used as pastures for cows, sheep and goats. The cultivation of mussels has been developed since the early 1960s for the production of mussels. In the southern and western part of the Lagoon immobile beds were built for mussels, occupying an area of about 10 ha. Mussel production and fishing in the lagoon is disturbed by the unfavorable conditions generated by the limited circulation of water in the summer, which leads to depletion of the amount of oxygen, increase in temperature and the amount of sulfur dioxide in the upper layers. Over the last decades, the large population growth in Saranda and Ksamil has been accompanied by a rapid expansion of these cities. The newly built areas have a chaotic structure, without any basic urban infrastructure. There are many unfinished buildings in the city that degrade the city landscape Cultural and natural areas of heritage character have been degraded by construction. Waste from small villages and agricultural activities end up untreated in the Vurgu plain due to lack of wastewater treatment plants. Illegal quarries on the northern borders of the municipality have degraded the landscape of the Gushore valley. There is illegal construction and insufficient maintenance of the green areas of the city, including the length of the promenade along the sea. Illegal constructions in Ksamil are eroding it from the inside of the hilly range. Illegal constructions in the Bredenesh area are threatening the development of tourism in the southern end of Saranda Bay. Urbanization threatens the connection of the urban areas of Saranda with Ksamil.[57] The rural area near the cities of Saranda and Ksamil, as well as national roads, is presented with a modified landscape and a high degree of urbanization. They have more developed infrastructure and villa-type houses, such as in Gjashte, Metoq and Çukë, which based on these characteristics have more limited opportunities for tourism development, mainly for traditional holiday with villas or contemporary houses with intervals. The infrastructure in many sectors is more seasonal, where as a result there have been frequent abandonments of the population from these rural settlements, and even the current phenomenon is the evacuation of many houses.[58]

More specifically it was found that the Butrint site was in an extremely insecure and threatened position because of the following:

• no clear definition of responsibilities and collaboration arrangements among government agencies and institutions were in place;
• no adequate human and financial resources had been made available for the site;
• no management plan existed;
• development, demographic and environmental pressures on the immediate surroundings of Butrint were increasing;
• no regional or local plans were in place or in preparation.[59]

In the ancient city of Butrint, the building or re-building phases show that economical, trading and cultural development of the city suffered two important declines, among others, the first, in the later part of the 4th century AD and the second during the 12th century AD. The foundations of the 3rd century AD buildings, including the orchestra of the theatre, the temple of Aesculapius (1st and 2nd centuries AD) and Roman baths, are today flooded

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with fresh water 10 to 60 cm deep. Analysis of subsidence on the basis of the archaeological remains is complicated by a variety of factors, and these difficulties must be acknowledged. This of course depends on the tide (maximum observed 40 cm) and season, but it generally indicates a post Roman subsidence of the area, either due to compaction or tectonic movements.[60]

The main environmental challenges and actions needed for this purpose are, informal development and non-implementation of law associated with socio-economic problems need to formalize the tourism sector and find ways to finance local infrastructure and generate assets as part of the process land development, development of tourist infrastructure with public and private funds. Globally non-competitive economic activities with a low quality and seasonal tourism product need to develop a competitive and sustainable model of tourism development, which will boost the tourism sector and local economies as well as expand the range of services offered related to it. Construction on the coast, in the hills around the city of Saranda with poor quality and cultural heritage which requires restoration and protection need to increase the quality of design by supporting environmentally friendly methods, reducing energy consumption and the use of renewable energy in new construction developments. Damage to natural resources needs to protect and improve biodiversity areas, protect green spaces, species and habitats. Noise pollution, caused mainly by vehicle traffic on the main streets of the city of Saranda as well as by nightclubs, need to control the noise level to which the population and tourists are exposed. Lack of environmental awareness by the population, business and visitors needs demonstration actions and public sector initiatives.[61] Although with the beauties or even the numerous natural resources Saranda continues to have problems with drinking water, sewage, urban waste management, as well as with the management of marine waters or numerous coastal territories. Environmental problems in Saranda are related to construction on the coast and the creation of hot spots from waste collection in unauthorized areas. In recent years the trends of rapid urban development have resulted in the expansion of the city along the coast, causing a chaotic development and not in harmony with the environment.[62]

6. RECOMMENDATIONS

Prior to developing urban infrastructure of Saranda and Ksamil, undertake geomorphological and geo-engineering studies.

Geological research should be intensified in the near future to discover the reserves of salt and to precisely determine lithologo-tectonic conditions in function of the construction of artificial beaches on Jonian Sea.

By studying coastal karst phenomena, one can determine the hydrological conditions and localization of the groundwater horizon.

All physico-geographical elements must be assessed and adapted to the human environment in view of tourism development.

Construction of some hydro-technical and economic works should be carried out in sectors of Vurg plain.

In order to avoid floods, protective canals and embankments should be built, along with the prohibition of inert materials from the rivers Bistrica and Kalasa.

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