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## THE ROLE OF NATURAL CONDITIONS IN THE HUMAN DEVELOPMENT OF THE MUNICIPALITY OF LEZHA

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**Abstract:** The Municipality of Lezha is located in the western part of the territory of Albania and has a wide geographical extent to the shores of the Adriatic Sea. Most of the territory is characterized by a flat plain relief, mainly in the western and central part, while in the eastern part the relief is generally hilly and mountainous. In the tectonic framework, the Lezha plain is located on the structural foundation of the Ionian, Krasta and Mirdita tectonic zones. The relief for the most part is distinguished for a consistency on the structures on which it is formed, where the 2 hilly ranges with parallel extension to each other, of Rrenc and Kakarriq, are formed on the structures of the horses and at the same time of the anticlines, and the hilly ridges in Mëlqi, Manati, Kallmet and Zejmen as well as the mountain ridge of Vela. In the central part, the territory is distinguished for tectonic faults which are reflected by active seismic movements, where as a consequence during the historical evolution, the city of Lezha has undergone radical transformations, while the decreasing tectonic movements experienced by the graben structure of Lezha, have caused relief and relief. consequently the waters of the Adriatic Sea have advanced towards the continental part, damaging many of the ecosystems of the coastal lagoons. The lithological structure consists of flysch rocks, triassic and jurassic limestones, volcanic and magmatic limestones, as well as cretaceous limestones in the northwest. The western and southern sectors near the shores of the Adriatic Sea are distinguished for a variety of special ecosystems with geomorphological, geological, geobotanical, tourist and economic values. The western part is bordered by the waters of the Adriatic Sea, where consequently the low plain coasts are formed near the delta of the Drin River of Lezha and the Mat River, which with the large solid river inflow have created favorable conditions for the accumulation of quaternary deposits. and for the formation of the alluvial field of Lezha. The territory is distinguished for typical Mediterranean climates, accompanied by high rainfall values, as well as a large number of hours of sunshine, offering opportunities for the development of seaside tourism and the growth of subtropical agricultural crops. In economic development, during the period before the 1990s, the main branches of industry were the wood and paper industry, construction materials bricks, tiles, etc. and the food industry (fish processing). One of the urban centers and the main seaport in the north of Albania is Shëngjin, which is presented as one of the most important centers of coastal tourism, where massive beaches stretch along the entire coastline. Coastal lagoons are a growing tourist and recreational attraction, but human capacity and infrastructure at the service of visitors is lacking in tools and equipment, signs, information boards, guides, trails, watchtowers, camping, etc.). Although in recent years there has been an increase in the number of visitors, the challenge remains their extension outside the peak of the summer tourist season, as well as their distribution in other parts of the managed nature reserves. The next largest influx of people will inevitably increase the risk of fires, which can destroy essential bird habitats. One of the main objectives of this paper should be to accurately determine the dynamics of the coastline in the medium and long term, requires the assessment of coastal fragments that are involved in the abrasion and deposition processes.

**Keywords:** coast, tourism, development, relief, environment

### 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. Although many social scientists place the physical event into a black box and focus on the societal aspects of hazards, geomorphologists will wish to define their field precisely to emphasize their contribution. From a strict geomorphological point of view, geomorphic hazards must be regarded as the suite of threats to human resources arising from instability of the surface features of the earth. The threat arises from landform response to superficial processes, although the initiating processes may originate at great distances from the surface. Thus, this definition excludes earthquakes, but not the landform response, e.g. slope failure, to earthquakes. Similarly, sea level rise is not a geomorphic hazard, but enhanced coastal erosion as a result of sea level rise is. According to this definition, processes such as wind, floods, and tsunami are not geomorphic hazards because they are not geomorphic processes until they change the landscape.<sup>1</sup> Method of Comparison based on the data of thematic maps, profiles and photographs have been identified in detail many geomorphological

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<sup>1</sup> Garesa.P. Douglas J. Shermanb. K. Nordstrom.F. *Geomorphology* 10. (1994)

features, close relationships between factors and causes which have conditioned, as well as compared a series of different morphological elements and physico-geographical with diverse indicators.

## 2. ROLE OF GEOGRAPHICAL FACTORS IN THE DYNAMIC OF RELIEF

This favorable geographical position of the mountainous ranges is related to the extension in 3 tectonic zones of Mirdita, Krasta and Kruja, lithological construction, folding and lifting structures, abundant waters and rich forest vegetation. In morphogenic features, lithological construction has also played a role, which is represented by a variety of rocks, especially the wide presence of ultrabasics and flysch in the east and limestones and partly cuaternar depositions in the west, leading to the formation of various relief shapes. The relief forms modeled in the structures with limestone composition, preserve the general morphological features of the plateau with active karst development, both in the ridge of Kakarriq, Vela and Rrenc. While in the sectors with ultrabasic composition, the relief forms are characterized by large values of density and depth of fragmentation, being clearly expressed with pronounced morphological contrasts, especially in the Kashnjet, Ungrej and Livadhëz ridges. External morphogenic phenomena, especially river, mass wasting and karst, have played an important role in the modeling of the morphological complex of the mountain ranges, forming a dense network of valleys and deep river gorges on the eastern part. The latter divide the mountain ridges, which for the most part rise almost directly from their bottom, showing the shapes of slopes with morphological contrasts, especially towards the upper sector of the Drin valley and other fragments where they end. The predominance of tectodynamic conditions with a large amplitude of tectonic uplifts above (500-800m), is reflected in the large values of the absolute height of the ridges. The values of tectonic uplifts have determined the dimensions of the relief fragmentation depth from 300-500m / km<sup>2</sup>, giving the features of a complex relief, especially along the ridges of Kashnjet, Ungrej and Livadhëz. During the peak fragments of the ridges, cliffs and conical shapes appear separated by the neck and mountain trails. Characteristic is the direction of the mountain ridges with the bordering river valleys Drin, Raboshta, Kaftall, Todraj and Vomës. An important factor in the direction of mountainous ridges is the widespread presence of tectonic faults, resulting in an irregularity in their position. In general, the NW-SW direction is characteristic for the ridges of Ungrej, Kashnjet and Vela. During morphotectonic evolution, the fragmentary deposits at the foot of the mountain slopes, especially at the northern tip of Vela ridge, the lower fragment of the Drin valley, are a consequence of tectonic uplifts of the respective structures. Morphostructural and external morphogenic phenomena have given the relief a complex character, being reflected in the genetic complexes present. Uplift tectonic movements have led to a continuous decrease in the groundwater level in the limestone rocks. 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.<sup>2</sup>

Geographical position of Lezha Municipality between the northern and central part of the territory of Albania and the high values of altitude above sea level, have significantly influenced the climatic, hydrographic and vegetation characteristics, enabling rich rain and snow, with long periods of frost especially on the ridge of Vela, Kashnjet, Ungrej and Livadhëz.

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.<sup>3</sup>

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

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<sup>2</sup> Oguchi.T. Butler.D. *The International Encyclopedia of Geography. Chapter Geomorphic systems.* John Wiley & Sons, Ltd. Published. (2017).

<sup>3</sup> Borrelli.L. Muto.F. *Geology and mass movements of the Licetto River catchment (Calabrian Coastal Range, Southern Italy) Journal of Maps. Volume 13, - Issue 2.* (2016).

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.<sup>4</sup>

Most of the relief is a direct consequence of tectonic deformations, as well as lithological construction, where as a result all fields and graben basins are formed on syncline and graben structures, such as the field of Lezha Zadrima and Mëlqia, which are built mainly from deposits quaternary depositions and soft rocks of Paleogene flysch. The hilly relief is generally formed on limestone anticline structures with parallel placement in the northwestern part, such as the one in Rrenc and Kakarriq, consisting of solid rocks, where the geological structures have been subjected to upward tectonic movements, especially during the quaternary period. The new alpine tectogenesis has been associated with large tectonic movements of anticline geological structures in Ungrej, Vela and the northern part of the Livadhëz structural knick. The intensity of earthquakes is also affected by the depth of groundwater, the characteristics of the relief, the conditions of the laying of the layers and the interweaving of the rocks. In flysch and molasses territories, with high landslide intensity and in sectors along active tectonic faults, constructions are not recommended, due to limited bearing capacity.<sup>5</sup>

### 3. INFLUENCE OF CLIMATIC FEATURES ON RELIEF

The territory is part of the Mediterranean climate zone, with cold and wet winters and hot and generally dry summers, being reflected in the daily, monthly and annual performance of various climatic elements. Climatic conditions are important for the development of active morphogenesis, being reflected in the continuous modeling of current relief forms. Among the main factors influencing the formation of climate are cyclonic and anticyclonic activity, position, height, shape, size and degree of fragmentation of the relief. The position of mountainous ranges in the eastern part as a connecting sector between the central and southeastern part of the country, near the passage of some air masses, has conditioned lower temperature values, with frequent inversions and relatively long periods of frost. In the current morphological activity, precipitation represents an important climatic element influencing with the quantity, the character of the fall and their geographical distribution, in the hydrographic network, the morphology of the relief, the vegetation and the agricultural crops. The role of relief is decisive in the changes of rainfall parameters, as the valleys of Drin, Raboshta, Kaftall and Vomës, allow the penetration of marine masses to the interior of the territory, serving as an intermediary route for continental air masses, towards the inland mountainous sectors. The high values of the absolute height of the central mountainous ridges partially prevent the entry to the east of warm and humid winds coming from the west. While from the southern sector, the Drin valley allows the penetration of warm and humid winds. High necks, gorges and other valleys, enable their penetration, inside the ranges.

### 4. DEMOGRAPHIC AND POPULATION FEATURES

The period after 1990 also marked a drastic movement of the population, mainly from deep mountainous areas to more accessible localities and with more employment opportunities. The most damaged part of the territory was the western coast where the land used for agricultural purposes was turned into a mostly informal urban area. In addition to the damage caused to agricultural land in the protected area, these movements found the local authorities unprepared, generating a number of problems related to their formalization, coverage with infrastructural and social services, in providing a minimum standard of living. The population of the Municipality of Lezha was 134 027 inhabitants.<sup>6</sup> Lissus (Ancient Lezha), is one of the earliest Albanian settlements, which has played a role important and special in Illyrian-Albanian history. According to ancient historians, Lezha has been one of the largest and most fortified cities of all of Illyria. In this period it is known as a coastal city and as a river harbor, and is one among strategic points in the Illyrian-Roman wars. Here in the 3rd century BC, the starting points are marked of the attacks of the military fleet of the Illyrian queen Teuta against the Roman empire. Despite the fact that Lisi has been a city continuously populated since antiquity, the studies of so far left open the discussion whether the city was really founded since 385/84 BC by Dionysius I of Syracuse as one of his Adriatic colonies, or if it is about a genuine Illyrian foundation of the third century BC. After the Roman conquest of Southern Illyria, in 168 BC, Lezha is mentioned as "Municip". The geographical position itself where it lies the city, has made Lezha since antiquity and continuing today is one of the centers most important economic, political and military in the country.. During the years of late antiquity and Byzantine period, there is a recovery of Lezha. In the period of Ahmet's rule Zogu (1924-1939) Lezha was a sub-prefecture of Shkodra. From 1945 to 1992 Lezha will be under the rule of the communist

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<sup>4</sup> Hugget.R. *Foundamentals of Geomorphology. Text*, U.S.A (2017).

<sup>5</sup> Collective of authors. *Geological map of the Republic of Albania*. Tirana Albania. (2017)

<sup>6</sup> Lezha Municipality. *Strategic Development Plan Sustainable Community of Lezha, 2013 - 2030*. (2013)

dictatorship. With democratic transformations, in the year 1992 The city of Lezha was organized in the level of Municipality.<sup>7</sup>

#### 5. FEATURES OF ECONOMIC DEVELOPMENT OF THE MUNICIPALITY OF LEZHA

Geographical area of the Municipality of Lezha has a number of factors that can be used to stimulate business development. More than 50 percent of the population is active and able to work. In addition, there are a number developed means of transport. Tirana – Shkodër highway, planned Durrës– highway Kosovo which will pass through Lezha, north-south railway line, Shengjin seaport and Airport of Gjadër (currently a military airfield) will contribute to the economic development of the country. Another important element that will serve to improve overall development economic and business is the agricultural sector. The region is quite well known for its land fertile and farming experience, while free space in the old enterprise area industrial is ideal for the development of agribusinesses. The industrial area has the infrastructure of needed but needs some repairs. In addition to tourism and agribusiness, another sector that can contribute to the economic development of the city is the construction industry. The sector of agrobusiness is potentially important for the economic development of Lezha. His fertile land, which lies on both sides of the city, is a good base for the production of fresh food organic. and for a range of meat and dairy products. The fact that Lezha is surrounded by several areas, the most fertile in the country, along the banks of the Mat River and in Zadrima creates the opportunity for agribusiness development. In recent years, much has been achieved in this area and the future looks promising. Also, positive developments have been achieved in fruit production and vegetables. About 70 percent of the flora of Albania is found in and around Lezha, about 120 species are cultivated. Regarding its subject, e.g. it includes the research into agricultural or urban ecosystems, in terms of aims, e.g. it intends to increase the quality of human life and among its methods, the tools of social research, e.g. historical ecology, are also applied. Anthropogenic geomorphology, consequently, easily fits among the various fields of landscape ecology, and the knowledge of ecological approached landscape research bulked during the last few decades would provide a useful theoretical background to anthropogenic geomorphology, too.<sup>8</sup> People have been trying to change the river network since ancient times prevent or mitigate the effects of flood events. But sometimes these changes took effect inverse, namely, they amplified these events. In many cases, to counteract the effect of flooding, but also for erosion control, for the extension of minor riverbeds for use in agriculture or constructions, etc, people resorted to channeling watercourses. Sewerage involves: the appearance of whites artificial rectilinear; deepening or widening of riverbeds; riverbed concreting; increasing the slope; departure vegetation on the shores, etc.<sup>9</sup> In the Municipality of Lezha, as slippery area is known the slope of the hill of Lezha Castle, Grykë-Zezë, the slope of the hills in Spiten, Pllanë, Troshan etc. In the castle of Lezha, the lack of soil stability endangers some buildings, which although built without permission and without study have a high risk of damage by landslide. There are also affected road segments and have been damaged by the landslide phenomenon, where one segment is Fishta - Troshan, which endangered by two slides in close proximity to each other. Also, the hill above the city of Lezha, for due to construction and deforestation has started to be endangered and be a potential subject of landslide of land.<sup>10</sup>

#### 6. MINERAL RESOURCES

Mining research has revealed copper reserves (quartz / sulfur type) amounting to 0.5 million tons in the part northeastern part of the province as well as numerous copper springs in Vele Vendi, Zef Sul and Qafë Kangjel. At the borders of Lezha Municipality two sources of nickel-sulfur with a presence of gold, have been discovered justifying further studies research. In Lezha, two platinum bearing horizons have been lined up. The works carried out in the coastal areas of Rila and Tala have led to the discovery of zinc ores, rutel, chromium, limestone, granite and tin. In the territory of Lezha are found about 40 percent of the country's non-metallic mineral reserves. In Kashnjet there are basalts that have been processed and used for the construction of highways and runways airport as well as magmatics for marble and granite. Considerable reserves of kaolin (porcelain, clay), with a wide range of uses. Other sources around Lezha, are decorative red marble in the village of Tresh, near the city, various inert materials in the Mat River, limestone, in Kakarriq and Shengjin, used for construction etc.

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<sup>7</sup> Lezha Municipality. *Strategic Development Plan Sustainable Community of Lezha, 2013 - 2030*. (2013)

<sup>8</sup> Lóczy.D. *Predictable trends for geomorphological and landscape research. Földrajzi Közlemények 132: 1*. (2007)

<sup>9</sup> Dumitriu.D. *Riscuri Geomorfologice. Curs*. Departamentul de Geografie. Iasi, Romania (2021)

<sup>10</sup> Co-PLAN, Institute for Habitat Development. Municipality of Lezha. *Drafting a local plan to reduce the risk of disasters in the Municipality of Lezha*. (2020)

## 7. ROAD NETWORK INFRASTRUCTURE

The functional area of Lezha has a very favorable position. It is located in the center of the main transport arteries that connect north to south and east to west. It is crossed by all types of transport: road, rail and sea. The proximity of the Municipality of Lezha to the main seaports makes this a very attractive and easily accessible area not only nationally, but also regionally for neighboring countries, such as: Italy, Montenegro, Kosovo and Macedonia and Greece. Also in this area is one of the three largest ports in the country, the port of Shengjin and Gjadër airport. The construction of these roads has not only shortened the distances and reduced the travel time, but they have helped to increase the cooperation of trade exchanges, increase the number of tourists, develop the economy, etc. Lezha FA is crossed by 130.45 km of national roads (or 44.5 percent of the national network that crosses the region), 80 km of regional roads and 282.5 municipal roads (or 68 percent of the municipal network of the region). Road infrastructure (municipal and regional) as well as related services are owned and administered by the local government. LGUs are decision makers for their maintenance and improvement.

The Port of Shengjin is also located in the Lezha Municipality. The port is being developed in order to increase the capacity of accommodation, processing and navigation safety. The volume of goods processing in this port has increased fivefold compared to the first 90 years. In the port of Shengjin are realized several activities such as: fishing, passenger transport and loading and unloading of various goods.<sup>11</sup> Shengjin Port serves as an important operational and logistics hub for these industries. His activities among others are; processing of goods, such as imports (cement, foodstuffs, fuels) and exports (such as construction materials, inerts), passenger transport and fishing.<sup>12</sup>

## 8. TOURIST POTENTIAL

Shengjin beach is the most important tourist destination in the whole region as well as in the country. It is one of the oldest beaches in the country. The beaches of Tala and Rëna e Hedhun are in the beginning of their exploitation and represent areas with great development potential. However further investments are needed in infrastructure. Kune-Vain Lagoon is an area with very rich flora and fauna which has an area of 180 Ha of wetland and 1050 ha of water and a depth of 1.5-5 meters. Some of the most developed types of tourism or with further development potential in the Functional Area of Lezha are; coastal, rural and cultural tourism. The study area Rana e Hedhun Beach is included in the territory of the Administrative Unit Shengjin, which is part of the Municipality and Region of Lezha. Rana e Hedhun is a virgin beach in northwestern Albania, part of the Drin River water basin. The geographical position of the area and its location favors the development of tourism. Rana is bordered on the south-west by the Adriatic Sea and on the north-east by Mount Renc, an area between the sea and the mountain. This beach is bordered by the Adriatic Sea to the west and Mount Renc to the east. By Rana e Hedhun sector to the delta of the Buna River, which is the northernmost tip of the Albanian coast, in a coastal length of about 20 kilometers the territorial morphology is almost unchanged and is characterized by black sandy beaches wetted by Adriatic waters.<sup>13</sup> Tale beach lies in the south-western part of Lezha municipality. The study area is bordered on the north by the Kune Valley - Vain - Tale, on the south by the beginning of the Mati Delta, on the east by the village of Tale where throughout the surface there are agricultural land restrictions, and on the west by the Adriatic Sea. The Tale sector has a fairly wide coastline and abundant fine-grained sand. The sand area has a small elevation from the sea shore, 1-2m, making in the part behind it a wetland system is created, which in some cases reaches below sea level. This reed wetland system is a very important habitat for waterfowl, which are numerous.<sup>14</sup> In the area there is an established infrastructure and large accommodation capacities, especially in Shengjin. Tourism is seasonal (May-September) and offers sun, sea and sand. Kune-Vain lagoons have a variety of flora and fauna. The coast from Rana e Hedhun onwards has very clean sand and rich in iodine especially in unused areas like Tale. After the sand in Shengjin comes a belt of pines to the of Kune and in the part when it connects with Vain on the coast it continues with a pine forest and perennial wood but it is isolated on both sides due to lack of two bridges and necessary infrastructure. The beaches are frequented from May to September with resident and day tourists, local and foreign. Regarding agro-tourism this type of tourism, the resources of the area are large and with high development potential, but a more detailed study, more accurate indicators, updated and complete data, an inventory

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<sup>11</sup> Institute of Contemporary Studies. *Economic analysis. Functional area Lezha*. Tirana (2015)

<sup>12</sup> Institute of Contemporary Studies. *Territorial Strategy Municipality of Lezha*. (2016)

<sup>13</sup> Diku.A. Bashmili.K. *Strategic Environmental Assessment for Drawing a detailed plan of Area of National importance Rana e Hedhun*. (2020)

<sup>14</sup> Diku.A. Bashmili.K. *Preliminary assessment for drawing the detailed plan of the Tale National Significance Area*. (2020)

of assets, and an integrated concept development are needed. tourist products. Supporting the craft sector has the potential to increase revenue; to promote cultural tourism and increase employment.<sup>15</sup>

The Drin River, which meanders through the city to flow into the Adriatic Sea, creates a panorama of wonderful and an excellent opportunity to pass the time as well as represents a potential of great for sailing and fishing. Lezha coastline along the Adriatic Sea of 28 km is an excellent source of tourism coastal. Building ports to accommodate cruise ships is one way of investing in the infrastructure required by this type of tourism. Shengjin and Tale beaches have an excellent perspective to attract local and foreign. Tale beach covers about 130 ha and has a great potential for tourism development. They lie between the city and the Adriatic Sea and represent a great potential for ecotourism and are very enjoyable for walking, fishing and hunting. There are about 92 varieties of migratory and native birds in Kune and Vain lagunes. The development of cultural, historical and archaeological tourism in Lezha is not a new thing. We have already determined most of the direction this development will take. A master plan for Tourism development along the coastal area is currently being discussed by institutions responsible.<sup>16</sup>

## 9. RECOMMENDATION

To create opportunities for promoting the collection and organization of the sale of agricultural products from the surroundings

To provide favorable conditions for the promotion of historical and recreation tourism

To use the banks of the river Drini of Lezha for the construction of recreational and commercial facilities

Critically evaluate hunting and sailing sports, implementing development strategies, through the participation of various interest groups and local and central government bodies

Encourage investments from the local community and foreign companies for the protection of the Kune and Vain lagoon environments

To reorganize the infrastructure of factories for processing viticulture products, fruits and vegetables and the fishing economy

To determine on contemporary criteria, banking services and financial structures for business credit support for administrative units and the city of Lezha.

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<sup>15</sup> Institute of Contemporary Studies. *Territorial Strategy Municipality of Lezha*. (2016)

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