

THE INHIBITORY ROLE OF NATURAL CONDITIONS IN THE USE OF SPACE AND REGULATION OF GJIROKASTRA IN THE SOUTHERN OF ALBANIA

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ABSTRACT

In rural area the impact of natural conditions on the use of space, production activities and ways of life is permanent and more sensitive than in urban space. The degree of impact depends on the particulars of building land, relief, climate, hydrographs, land, flora, fauna and level of development of society, which says the size and way of human intervention in the environment. As part of the Mediterranean space, Gjirokastra, with mountainous relief and climate caprices, is very exposed to the influence of natural factors.

UDC CODE & KEYWORDS

■ UDC: 551.5 ■ Benefits ■ Natural Factors ■ Natural Risks ■ Land Values.

INTRODUCTION

For a long time use of natural resources Gjirokastra district has been irrational, so the study of ways to use natural factors in the function of organizing the rational use of space and territory regulation is a problem that requires research and long-term solution. To check the exploitation of natural resources, plays an important role in legislation, so it is important to recognize that companies have obligations to the environment and forms the measure of punishment if the harm it. Also they must be equipped with the appropriate permit, certificate of quality of data on the amount of material used in the year.

The use of natural conditions in view of the use of space and territory regulation

In geographical terms the interest lies in the adaptation of human activity with the environment and resources it offers. Adaptation to the characteristics of the environment is the concern of geography today in two main aspects: to protect against the damaging impact of natural factors (especially climate) and for a rational use of natural resources to realize a complex of sustainable development.

As for the district of Gjirokastra, natural assets are diversified. A significant amount of its mineral assets are identified, but unexploited. A part of the assets, such as construction materials, are subject to an intensive exploitation, with serious consequences for the environment. This is because demand from the construction sector are high and expected to be so in the future, as the country achieve a comparable level of development of developed countries in the region. But to have for the future today for a healthy environment should be strictly controlled use of construction materials.

For a more rational use of this material in spatial terms will serve as introduction to the economic exploitation of reserves in the complex structural generation of Upper Kurvelesh. This will not only serve the development of the region Tepelena-Memaliaj, but also the spaces of valleys mountain Bënça Belica.

At the current stage of development are of particular importance to the county water resources, therefore required to become a scientific assessment of water resources of permanent and temporary, and the potential of this space water.

Drilling for water balances are hurting hydrogeologic, as statements of groundwater has a seasonal character. For this reason, any interference of this kind must be authorized by the licensed geological experts.

- Natural hazards and land use
 - Geological and seismic hazards
 - Risks from earthquakes

Makes the study of space in the area seized by differences, tectonic, quaternary movement, especially break-ins that create lines along which tectonic seismic processes continue to be active. This is a space with high activity of earthquakes, especially along the severance active stretch northwest-southeast, where are most earthquakes epicentres. *There are two main lines: first, mountain Dhrovjan – Wide-neck of Skërfica – Polje – Kolonja – Shtëpëz – Mountain of Griba – Golem – Bënça – Valley of Luftinja – Neck of Gllava – Izvor – Rabie and further, in the district of Berat; second, Golik – Hormovë – Lekël – Lunxhëri – Saraqinishtë – Bureto – Libohova – Vllaho-Goranxi – Gllina – Peshkepi – Radat – Llongo – Koshovicë.* In high intensity earthquakes have affected mainly two factors: soil conditions and sharp relief and steep one. In Gjirokastra, Permet and Tepelene has built many residential area on the river terraces which can be easily captured by the risk of earthquakes. Gjirokastra and Tepelena (The Encyclopedia of Tepelena, 100) by earthquakes historically have been captured 8 Scale Richter, and 7 Scale Richter earthquakes. Mentioned earthquakes in the region of Delvina 10/10/1858, 13/08/1859, 10/04/1860, 10/10/1865, Izvor villages hit the Rabie and caused many casualties (Sulstarova, E., and Nesim Koçiaj, 47), 14/06/1893, 1896 who seized the Lunxhëri radius, Zagorie, Polican, Çatistër and valley of Kardhiq, 14/03/1917 in the Delvina, Dhrovjan, 26/11/1920 when an earthquake hit Tepelena (9 Scale Richter) and its surrounding villages, 26/11/1926 that was associated with fracture of the land subsidence, the year 1930 in Libohova, the year 1933 in Lazarat etc., on 15/09/1941 Tepelene of 1952 in Permet, 22/02/1963 in Shtëpëz, 09/02/1967 in flysch-limestone contact (7.5 front), the Tepelena district 03/04/1969. The earthquake of the year 1971 (8° Scale Richter) in Libohova, Sofratikë, Selo, Bamatat, Klishar and finally Graph and earthquakes of December 1977, March 1988 and 2003 in Gjirokastra. The epicentres of the earthquakes of the years 1800-1970 have been in line Selo-Rabie. This line is active today, mainly in fault Selo-Rabie, Picar-Shtëpëz and Izvor-Rabie. To study and warning of earthquakes in the district has been operating Tepelena a seismological station.

Earthquakes are associated with phenomena such as ground cracks, exit, loss and disturbance of surface waters and underground resources level fluctuations, temperature changes and their country, sliding slopes, slide, crash, injury incoming water and infrastructure. Along the tectonic contacts of the above mentioned detachment occurred limestone blocks, falls, gravitational gliding etc., as the extent of Black Scale, Zhulaj, Bënça, Golem, Lekdush, Majkosh, Izvor, Rabie and Koshovica, which caused subsidence damage to the canal and hydropower 15m in length. The nature of the parent rock should be considered especially for the construction of settlements, economic and infrastructural facilities, which must be preceded by studies and geological-geomorphologic engineering. The map of regional micro-seismic space perspective contributes to an assessment of seismic tremors.

▪ Risks from geological works

Geological works have serious consequences on the environment, as mineral law in this case is not applicable. So in settlements Andon Poci, Palokastër, Libohova, Erind get ahead of the old deposits that meet the conditions for oil and gas research. Drilling for oil search mountain range foot Shëndëlli-Lunxheri-Bureto are made by an Austro-Hungarian firm, while the foot Bureto in Libohova, Erind, Bylysh and neck of Buz by a Greek firm. Geological studies the company has made for problematic areas as Pogoni, brook and Çullo-Granicë, Virua, while Oil and Gas Institute has done survey works in areas of Postenan-Çarçovë, Progonat-Kalivac, Vagalat, Osmanzezë, Krahës, Dragot, Hormovë. These geological works have hampered or prevented the efficient use and regulation of rural space for other purposes such as agriculture, tourism etc..

▪ Risks from mine collapse

In the area Cërrilë-Danaj are performed processes to extract the coal. Abandonment and lack of maintenance of mining territories have resulted in damage micro ambient.

▪ Threats from possible poisoning

Output of methane gas from the throat of old wells and galleries is seriously damaging the environment of the area.

- Geomorphological hazards
- Mudslides

The slopes of the enrichment plant in the village of Izvor-Memaliaj by and between the Memaliaj-Tepelene areas are some who are a danger to be slide area.

Below the rock Orlos on villages of Kellez and Dhoksat, reactivated in 1982 is a slide that constantly threatens the brook Grabovica and sources of drinking water to village of Dhoksat.

Negative impact on the environment have been drove in the village municipality of Picar-Kolonje (since 2002), Fratari in Tepelene have reactivation of old slide as a result of the opening of the construction sites or career. Prevention, restriction or avoidance of them can be done only after deep study to determine the regulatory measures on the slopes of endangered systemised.

▪ Falls

Process falls are a very present in the area around the villages Erind, Gjate, Saraqinishtë, Tranoshishtë, Stegopull, Këllëz, Dhoksat, Zhulat and Hos. Falls and collapse especially are favoured from misuse of land and natural vegetation damage the physical environment and human activity.

▪ Erosion of the river banks and flooding areas

Inappropriate use of inert materials in river beds and water movement slows down in periods of intense rainfall on, because of erosion of soft shores and flooding of agricultural land. These processes, particularly risk population, housing, economic and infrastructural facilities in the valley Drino and Vjosa, where human activity is more intense, due to rapid population of "wild" demographic movements after 1990. Control of the use of inert materials is provided from river to prevent further environmental damage in this area. *The main factors* that have favoured erosion are the uncontrolled expansion of agricultural surfaces in the inclined terrains; putting under culture grounds with little resistance to erosion; reduction of green areas with grass and shrubs and degradation of soil physical conditions; construction, urbanization and industrialization of space without studying. To reduce the risks posed by erosion is necessary to drainage organize surface and drainage network; be hydro built powerful derriëre mountain ambush and retainer walls, the reforested slopes with trees that have deep root system of powerful others.

▪ Activity slope processes

As a result of the use of inert materials, groundwater activity, reduction of plant cover, etc., are activated processes such are mudslides, falls, collapse, leakage of mud in Vasjar bridge, the road sector in Memaliaj, Tepelene – Cold Water, Black Scale (often blocked by the mountain quarry of clay, Mogila, Qesarat), that threaten buildings in the deforested hills, rural roads as Memaliaj-Qesarat-Danaj, Kardhiqi Bridge, Çepune-Kardhiq, Kardhiq-Taroninë etc. In Zhapokika have been slide a road segment of 100m to the east, by approaching the river bed. Damages so far are sufficient to understand the importance of topographical studies and unstable territories geomorphologic to be performed so that construction activities of any kind. Especially important is to avoid construction along tectonic lines in shrifts lands in molasses and fitch of the inclined slopes.

- Damage from atmospheric phenomena and climate obstacles

Lightening and electric discharges lead to damage in people, livestock, forestry, socio-economic facilities, etc...

Adding water to rivers, floods, storms, avalanches, drought continued to pose threats to natural environment, social and economic Gjirkastra district. So, great droughts of 1931 led to sharp drop in agricultural production. Strong winds pose a natural threat, as it could break and grubbing trees, damaging roofs and overthrow the stacks, hindering the movement of people, animals, vehicles, aircraft etc... To reduce the damage caused by wind should be carefully selected areas to build settlements, airports, sports centres etc...

In Gjirkastra and Permet strong winds have significant happening throughout the year and in some cases have caused damage in the apartments, cultures drum fructose, vegetables in greenhouses, cattle stalls, etc... So in 1970, strong wind that came from the southeast, fell down the roofs of houses Matohasanaj-Lopes, in Sinanaj hospital and dropped some electric pillars. Frost have caused significant damage to agricultural crops, such as 1971 when temperatures in mountain areas down to -5 ° C, while the area of low -1.3 ° C, damaging 75 ha with corn used for feeding livestock, 136 ha of corn for grain and 25 ha of vegetables. Hail also caused damage, such as in 2001,

when the shower (a grain weighed 300gr.) damaged vineyards especially in municipalities of Çarçovë and Petran in the district of Permet.

Active avalanches on slopes inclined by 20-60°, but especially in 20-40°. In shady slopes avalanches fall in December, January, February, while the sunny slopes in March and April. They destroy head ambush, dams, reservoirs and residential centres. In villages, especially in the eastern slopes of the mountain of Lunxheria (from inhabitants called mountain of Rapavica), every winter avalanches noticed the small size, associated with displacement of tweak and timber. Floods constitute a natural phenomenon common in Gjirokastra district and have influenced the agricultural environment, settlements, agricultural land, irrigation and drainage network, livestock, infrastructure, promoting processes of erosion and environmental degradation.

Main causes of floods are intense rainfall leading to the emergence of Vjosa the bed, use of inert materials in riverbeds, destruction of vegetation by deforestation, exaggeration pasturing, fires, works mineral deficiencies works (Meçaj, N, *The Applicative Geography GIS / RS and Development 30-40*) supporting (ambushes, dike, levee), interventions hydrological (drainage, dams, channels).

Among the consequences that cause floods are breaking the embankment, coming of irrigation and drainage channels; damage forests, shrubs and herbaceous vegetation, destruction of agricultural products; stimulation of the slide; damage to livestock and their food base; collapse of fruit trees; erosion layer of soil production; suspension and contamination of drinking water, damage to sewage and sanitation, damage to road networks, transport and commerce; damage to telephone lines, electric and electric cab; flood of fuel, destruction of health infrastructure and education. In the years 1933 and 1937 there were floods in the districts Përmet and Tepelena. On 21/10/1960 by floods damaged agricultural crops (70 ha maize, 14 ha of hay, 12 hasëll) and livestock (360 head of livestock drowned in Gjirokastra and Tepelena circles), 17 houses were flooded in Permet.

In 15-16-17/11/1962 in Gjirokastra district fell 264-294 mm precipitation, which was graded near disaster.

The flooding of the Lower Dropull and scope of Gjirokastra (50 ha of land) of crops were damaged and 2 stalls in male brook of 5 hectares of land destroyed by Nimica in Lunxhëri, broke bridges, dams and roads defense.

River Vjosa in Biovizhda abducted and footbridge the iron bridge linking Këlcyra area of Malëshova, dust filled the road in front of Badëlonja, while on the road Memaliaj-Tepelene and Këlcyre-Permet was the sole landing in many segments. On 30-31/12/1970 in Gjirokaster, Permet, Tepelena fell respectively 406, 136, 101mm rainfall, which flooded 130-140 hectares of land, warehouse, barn and village reservoir "Asim Zeneli" (Gjirokastra), agricultural lands of Dukaj, Qesarat and Krahës (Tepelene), damaged telephone lines, electric booths, electro pump 3 stations, while in Permet slipped around 200m³ and the area receives city water Permet, was inundated electro pump station to Këlcyra, was split in Vinokash dike of 60m in length, were cut off and founder dams, canals and the reservoir basins of Varibop, was flooded 50 hectares of wheat and Lucerne in the Këlcyre and Kutal (Meçaj, N, *The Basin of Vjosa. The Natural Resources and the Qualities Geomorphological* 222). In 1971 came and flooded the bed Vjosa 14000th ha of farmland (Sala, S., and Perikli Qirazi),

damaged dams, embankment, bridges, and irrigation and drainage channels.

Gjirokastra city entrance roads, Tepelene of Permet, built on the storage of torrents, were flooded, as water cannot leak through it blocked by solid materials.

Rainfall caused the collapse, erosion, reducing the sole road and damaged bridges in segments Përmet-Këlcyre, Permet-Çarçovë and Tepelene-Memaliaj. They damaged homes (17 in Permet), water, electricity networks, buildings in Kuqar electro pump station, in the village Asim Zeneli, Lazarat and Odrie (335 heads of fine), and areas of Gjirokastra and Permet. On 23/09/2002, rainfall that fell with very high intensity in 50 hours creates a catastrophic situation in Gjirokastra district. Damage was greatest reservoir of Krahës, village Iliras (landslide), Bënça Bridge, Bogova and Drino (from Kakavija in Subash), village Hormovë (sliding), Dhëmban and Ballaban, Permet-road areas along Këlcyre (were flooded) and Tepelene-Gjirokaster road axis (was blocked). Total 26000th ha were flooded on agricultural land, flats were damaged and 7500 families were evacuated in 2000, went out of use 5 stations and 4 electrical substations, electrical substations were flooded two of Gjirokastra and Tepelena and walked out of work 2 pumping stations. During the winter of the years 2001, 2002 and 2003 were flooded rural roads in the municipalities of Çarçova- Picar and apartments in Ballaban. Damage of the embankment, construction and waste collection within the beds of rivers, etc., favour the emergence of river beds in case of intense rainfall. This is the case in the north-eastern area of Memaliaj, Qesarat-Toç area, in areas Arshi Lengo, Valaresë, the eastern part of the scope of Dervicianit, area by Viroi, by Çepunë, in place of union with river Drino-Nimica, so settlements should be built far away from them.

Some of the measures affecting the restriction to prevent flooding are:

- *Systematization* of agricultural lands in slope, their paper under izoipsos and, where slope is greater, creating generations of plant creation of conditions for development of forest vegetation, able to prevent mudslides, collapse and erosion.
- *Systematization* of water leaks, pools of leaks, construction water collector, dams and mountain accommodation space protection from erosion. For 30.4% of the county area located in the heights above 1000m, use for forestry, phonology, viticulture and tourism purposes makes necessary the execution of works and hydro technical agro techniques.

Forecasting in time of natural phenomena and processes hazardous is of particular importance to avoid the damage they can cause in agricultural cultures, settlements, infrastructure, etc...

- Risks of assaults by man (burning, deforestation, chemical pollution)

A serious problem for all Mediterranean countries are fires, most of which is caused by man. Burned lands are completely exposed to erosion (water and oleic) and destined to destroys. Protection of ecological systems from damage and pollution will help in maintaining the balance hydro space. Pollution problems are noticed in Luftina waters due to mining and enrichment plant waste. There is a risk of pollution from urban and industrial wastes, for countries where collected and processing which must be carried out studies of environmental sound-geographic. Another risk is that growth countries where the jump

surfaces of solid waste in open careers in fundamental rocks in eastern Montenegro page wide, what damages, pollutes blocks and funnel, holes and caves. The medieval buildings of the district as a defensive castle of Gjirokastra, the most mature in the architectural view, referred to in the years 1388-1389, after 1990, as a result of the impact of natural conditions and human activity have not escaped without injuries, especially from mudslides. Urgent task related to these historical monuments, cultural heritage is undertaking the engineering safeguards. The problem of stability is especially sensitive when construction carried out on slopes with slope over 10° and mostly clay composition. As in the territory of our district has sectors with highly developed building grounds and other human activities should be selected very carefully.

- Risks caused by pollution.

Water air and land are seriously threatened by pollution that comes from multiple sources and different. In rural area they pollution from using chemicals in agriculture, farms pigs, poultry and other livestock, food processing waste for livestock, agro-industry, detergents and household waste, handicrafts and industries that developed in rural area (mining) and urban (processing of skins and wood in Gjirokastra, etc.), dumping etc. tourists. Strict control of pollution sources and implement sustainable development principles will significantly affect the protection and improvement of water quality, air and soil. In conditions when the above factors are a constant threat to the natural environment, social and economic development in the district of Gjirokastra, it is urgent to take measures to identify and prevent them and to increase readiness, resources and the creation of teams trained to control of difficult situations and the restoration of normality.

- Assessments on the manner and degree of exploitation of natural conditions for the use of space and regulation of the territory, compared with the experiences of other Mediterranean countries.

Mediterranean coasts are populated since the earliest periods of human history. Position and assets of diverse Mediterranean world have favoured communication between peoples, the development of agriculture and trade crafts, emergence and development of major ancient civilizations.

Since that time the natural environment is beginning to feel human intervention, which has changed it to try to adapt them to his interests for food and other means of living. Mediterranean countries have very old agricultural traditions. Olive groves and vineyards of the Mediterranean area are cultivated in terraces built centuries skill in rocky terrain and very inclined. Agricultural landscape has evolved over the centuries and it is today type of mixed cultures: cereals (wheat, corn, rye, oat) to alternating with olive groves, vineyards, fruit tree covering in regular line entire plot and create geometric shapes be irregular, but very interesting. In general, in the same plot are coupled two or three cultures: maize with beans or green beans, grains or forage crops with fruit trees; vineyards, vegetables, etc... Mediterranean region qualify as citrus, vineyards and olive grove. Elements of the landscape are prominent terraces with dry limestone walls, wet lands and coastal lagoons, small parcels and carefully cultivated systems old and new irrigation channels, etc... Despite the efforts of thousands of years, here it comes to a relatively poor farming for quantity and quality of land, and for insufficiency of chronic water shortage, a developed agriculture in small plots of rare, family owned farms that produce mainly personal consumption.

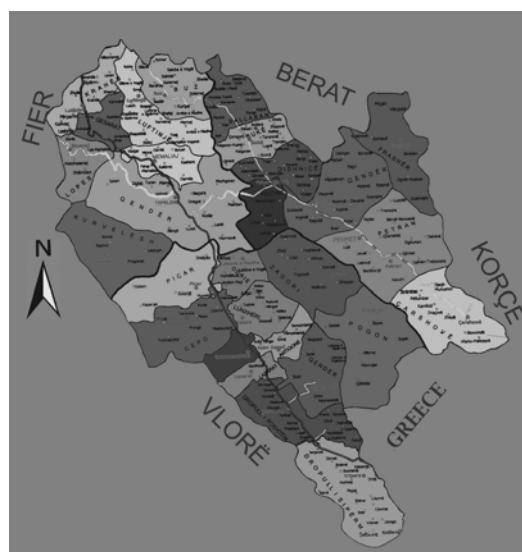
Mediterranean climate does not allow annual plants (corn) to finish their vegetative cycle before summer. Also slow technical progress and technological and cultivation of plants with high labour demand side, along with low fertility lands are flinty characteristics that differ agriculture of this region. But even in this region does not lack examples of deeply specialized agriculture, of rationally and effectively higher as Spanish huertas - an example of modern agriculture where the quantity, quality and distribution of water are scientifically controlled and programmed, where agricultural production and industrial processing of products (agro-industrial) is a mechanism that operates inter perfectly, where marketing and sale of products (fresh and industrialized) create full cycle of modern agricultural economy. In Spanish huertas intensively cultivated land by farmers organized in collective production (cooperative), supported financially (loans, donations, etc...). Animal husbandry is developed in the Mediterranean relatively difficult conditions. Relief mainly mountainous and Mediterranean climate (especially prolonged drought) has conditioned the selection of animal species that grow, which dominate the fine cattle (sheep and goats).

These factors, as well as water supply and timber-oriented and have human settlements. Rural areas are mostly concentrated type, built near a spring or river, or along the coast, in places more suitable for anchoring ships. In traditional settlements and in areas where the missing timber, brick houses are built of baked clay or stone. In all cases they are coated with lime, to be more refreshing during the summer season.

Roof, in many cases are in the form of loge terrace, which serves to collect rain water, which subsequently stored in special deposits. In addition to agricultural activity, population is oriented Mediterranean sea, as the trade of products, both for the exercise of fishing and tourism economy.

This analysis of the role of natural conditions, allows reaching the conclusion that environmental features are important in determining the forms and methods of intervention to regulate rural territories around the Mediterranean, including the district of Gjirokastra.

Figure 1: The administrative map of the region of Gjirokastra



Source: Author

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Conclusion

The nature of the parent rock should be considered especially for the construction of settlements, economic and infrastructural facilities, which must be preceded by studies and geological-geomorphologic engineering. Floods constitute a natural phenomenon common in Gjirokastra district and have influenced the agricultural environment, settlements, agricultural land, irrigation and drainage network, livestock, infrastructure, promoting processes of erosion and environmental degradation. Forecasting in time of natural phenomena and processes hazardous is of particular importance to avoid the damage they can cause in agricultural cultures, settlements, infrastructure, etc... As in the territory of our district has sectors with highly developed building grounds and other human activities should be selected very carefully. Strict control of pollution sources and implement sustainable development principles will significantly affect the protection and improvement of water quality, air and soil. In addition to agricultural activity, population is oriented Mediterranean sea, as the trade of products, both for the exercise of fishing and tourism economy. This analysis of the role of natural conditions, allows reaching the conclusion that environmental features are important in determining the forms and methods of intervention to regulate rural territories around the Mediterranean, including the district of Gjirokastra.

REFERENCES

1. Krutaj, F. *The Catastrophic Natural Hazards in Albania. Geographical Studies 15*. Tiranë: Centre of Geographical Studies. The Albanian Archive, 2005.
2. Meçaj, N. *The Morphology of upper Valley of Vjosa. Geographical Studies 1*. Tiranë: Centre of Geographical Studies, 1985.
3. Meçaj, N. *The Flood of the years 1962-1963 and their Geographical Consequences. Geographical Studies 14*. Tiranë: Centre of Geographical Studies, 2002.
4. Meçaj, N. *The Basin of Vjosa. The Natural Resources and the Qualities Geomorphological*. Tiranë: Centre of Geographical Studies, 2003.
5. Meçaj, N. *The Flood in Albania 1933 – 2003*. Tiranë: TOENA 2003.
6. Meçaj, N. *The Applicative Geography GIS / RS and Development*. Tiranë: TOENA 2004.
7. Qiriazhi, P., and Aleks Vranaj. *The Physical Geography of Albania 1- 2*. Tiranë: SHBLU, 1998.
8. Qiriazhi, P. *The Physical Geography of Albania*. Tiranë: Afërdita, 2001.
9. Sala, S., and Perikli Qiriazhi. *The Diffusion of Geomorphological Hazards in Albania and their Government*. Geographical Studies 15. Tiranë: Centre of Geographical Studies, 2005.
10. Sulstarova, E., and Nesim Koçaj. *The Earthquake Catalogue of Albania*. Tiranë: The Academy of Science. The Seismological Centre, 1975.
11. *The Encyclopedia of Tepelena*. Tiranë: The Encyclopaedic Publishing, 2003.