GEOGRAPHICAL ASSESSMENTS ON THE RELATIONSHIPS BETWEEN AGRAIAN ECONOMY AND POPULATION AFTER 1990S (CASE STUDY IN ALBANIA)

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Abstract:
Western Lowland, being under the influence of a growing humanization, has been evolved all along the agricultural ecosystem. Physical environmental factors have played an important role in the structure,, composition and dynamics in general and in agricultural environment in particular. This ecosystem dynamics is associated with the evolution of agricultural space, agrarian relations and property statements. In terms of small land property it is characterized a private output with few investments and a competitive market. As one of the main economic sectors, the agricultural production provides a good part of its income in Lushnja district, as part of the Western Lowland. Due to the geographical position, its favorable climatic factors, soil quality, etc., in the district of Lushnja, grains, vegetables, fodder are cultivated mainly in the plains and the various cultures in greenhouses. While in hilly areas olives, vineyards and tobacco are being cultivated. It is distinguished for an agriculture potential, who has conditioned the living community in this district. Population by her presence has constantly exerted pressure on the working land space. This pressure is expressed through the calculation of the physiological density. Free movement of population after 1990s, established a good part of the population in the Western Lowland and Lushnja district (mainly coming from mountainous areas and eastern parts of Albania). The article aims at presenting a geographical assessment of case study area, certain aspects of the agricultural economy and relations with demographic developments in recent years

Key Words: GIS, population, agriculture economy, physiological density, flat landform

Introduction:

Geographical area under the study and the applied methodology.

The area taken under study (Lushnja district), geographically is located in Myzeqe e Madhe Field, (part of the Western Lowland), with access to the Adriatic Sea. It is located in the west-central coast of Albania, and it is bordered to the north by the district of Kavaja (Shkumbin River), to the northeast by Peqin district, on the east by the district of Elbasan, by Berat and Kucova district (at a length of borderline 25.0 km from which land 1.2 km, 20.5 km river, Seman river, 3.2 km lake, reservoir of Thana) and in the southeast and south by the district of Fier (land border and the river, the river Seman). Lushnja district on the west is located by the Adriatic Sea. It is part of the prefecture of Fier. Located between the geographical coordinates: φ N 41°03'01 "(village of Çerme e Siperme), φ N 40º16'01" (village of Imsht); λE 19°30'01 (Karavasta e Re); λE 19°51'01 (village of Murrizë-Kozare). District area is 712 km²;[53]. This position facilitates communication with marine port areas of Durres and Vlora and Tirana capital, within a short time.

Methodology of work. Methodology of work has been selected in accordance with the objectives of each stage of work. The *comparative method* is used to served explanatory study, in terms of time and quantity; *mathematical-statistical methods* of analysis served quantitative problems, qualitative assessments, in various aspects of population. For spatial analysis and treatment has served the implementation of *GIS technology*, which through an extensive database created in Arc Map program, has enabled the mapping of elements in the agricultural economy and population. Integrating GIS served cameral work to map creation.

[53] Data gather from administrative map of Albania (1:200 000)

1. Assessments of physical and geographical features of the area in favor of the agricultural economy

Geographical coordinates and the geographical location of the study area determine the prevalence of a group of favorable factors regarding the population and agricultural economic activities development.

Tectonics. Most of Lushnja district land is consisted of the quaternary deposits. Construction and composition of Quaternary deposits in the downstream of river Seman and Shkumbin (rivers that limit in the north and south area), is of river-swamp and river-lagoon nature[54]. In the eastern part, the area of Lushnja district, is bounded by the so-called Dumre Diapir, consisting of anhydrites, limestone, dolomite, gypsum and clay. Hilly landscape on the west of the area is represented by the hilly coastal range where greater heights are 192 m above sea level in Gomares Gur hills of Divjaka, and Ardenica 211 m. *Hypsometry*: 568 km² of the whole area is up to 0-99 m above sea level and 144 km² located at 100-299 m above sea level. Most of the surface, is occupied by the areas of Myzeqe e Madhe. The average height above sea level is estimated 20 m in the eastern part and 3 m in the western part. This field has a small slope and its maximum height does not exceed 35 m[55].

Lushnja is featured by Mediterranean subtropical sub area *climate*. Due to its geographical position and protection from cold winds east, it is warm throughout Myzeqe area. This geo-space has a climate with mild and short winters, with low rainfalls, maritime influence and long hot and dry summers. *Local climatic factors* affecting more are:

1. Proximity to the Adriatic Sea, which softens the climate. Adriatic influence surpasses the area penetrated inland. The Sea preserves the earth's surface from intense colds turning cold air into a warm humid air. His influence is expressed throughout the year.

2. *Low relief plain with no high hills,* allows the course of the winds laden with moisture. Fluctuations in temperature values in field areas versus the hilly areas are up to 1.5°C-1.8°C.

Climate Elements. Lushnja territory weather values with no windy days are smaller about 7% compared to the national average of 50%. This refers to the movement of earth, air - water. In Lushnja territory is mostly noted the impact of marine winds and exactly marine breeze. The maximum speed of these winds reach to 5 - 6 m/sec (in Karavasta) and is also the country's maximum speed compared to the average wind speed in the country 2 - 4 m/sec[56]. For higher values of the average monthly air temperature mention the months of July and August (24˚C - 25˚C), while the coldest months are January and February (6°C - 9°C), which are related to the impact of factors and climatic elements. High air temperatures require that measures be taken to eliminate the negative consequences throughout life and economic activity.

With regard to agricultural activities: Temperature of vegetation starts on average in the first ten days of March and continues until the beginning of the first ten days of December. Climate is an important element of plant activity, those influenced by two main factors: *drought and cold, which refers to the length of the dry season and the duration of the winter*. These two elements are connected to the biological activity of plants in such a way that an increase in monthly temperature of 6°C, the plant needs water are doubled. These needs are conditioned by the evaporation of water from soil and plant transpiration. Monthly evaporation - transpiration is equal to 70 mm in the provinces, where the temperature fluctuates around 20°C, where it belongs and Lushnja district[57]. Big changes in temperature are harmful to agriculture and flora in general. Lower values and temperatures bigger than 30ºC require special attention especially for the agricultural economy, which is one of the main economic activities of the district.

Precipitation is an important climatic element. The months with greater rainfall amounts are November-December, and less rainfall are June-July-August. Multi annual average value is 635.7 mm - 1002 mm and is considered small, positioned Lushnja as a country with low rainfall. If we correlate the average monthly air temperatures and average monthly precipitation amounts, we will conclude

[54] Grup autorësh, "*Gjeologjia e Përgjithshme*", Tiranë, 1982, pg. 139.
[55] Ziu, T., Journal *"Myzeqeja",* Vo.1 Dicember, 2004, pg. 4.
[56] Qiriazi, Perikli, Gjeografia fizike e pergjithshme, pg 68,70
[57] Geço, P., *"Klima dhe bimët*", Tiranë, 1977.

that precipitation amounts are acceptable in the economy of the district for the winter season. The situation is most critical versus low amounts of rainfall during the summer season, where air temperatures are higher and greater drought. Agriculture during the summer helped with artificial irrigation.

As climate asset for this area estimated large thermal property, which makes it possible for many plant vegetative cycles is not interrupted throughout the year, which is a milestone in the agricultural activity. There is enough light and predominantly clear weather. It is estimated as a negative moment the small amount of precipitation mainly during the summer (mainly 2 - 2.5 months dryness). In this period it is used the artificial irrigation

In the study area is bounded by the downstream parts of the river Shkumbin and Seman (Adriatic Sea watershed streams), who are meandrous. They are water sources for irrigation, especially during the summer season. In their flow they have transported eroded material from the mainland to form very fertile land, especially in the fields of Divjaka. The transported material has served for the formation of beaches of Divjaka, Spille and Seman. Hydrography is consisted also from: Tërbufi and Myzeqe reservoirs; Lagoon of Karavasta; a part of the Adriatic Sea and Thana reservoir.

Larger quantities bring water from rivers in winter, autumn and spring, while smaller amounts are in summer. This fact and the lack of rainfall have necessitated artificial irrigation in agricultural economies. River water in downstream deposit more material by reducing biological productivity of the field in case of flooding and turn those in poor soils.

Types of soils. Recognition of soils helps in recognizing the geographical landscape and agricultural intensification. Most of the land area are gray-brown (2-4% humus) that generally extend up to an altitude of 600 m above sea level. In their formation have influenced alluvial, marine, lake and sediment deposits. In this process has been also influenced Mediterranean climate with its drought up to 3 months and physical- chemical alteration processes. The soils under crop are used for the cultivation of grain, vegetables, forage and subtropical crops. Grey pastures sub clay soils are positioned in Krutjes commune. Alluvial soils are found near river Seman and Shkumbin and are partly cultivated. Alluvial soils are found near river Seman and Shkumbin and are partly cultivated. In these lands, because of repeated deposition alluviums, vegetation is sparse. S*alty lands* are located around the area of Karavasta. Slightly salty land are in Saver, New Çiflik, near Thana reservoir, and Sejmenzë. There is little halophyte vegetation in them. They are rich in NH_4, Na. From the chemical point of view these soils are acidic soil. Paludal soils are characterized by high agricultural potential after their reclamation. Pastures clay paludal soils face Golem commune (Pluk village), commune Tërbufi[58]. In Tërbuf peat layer thickness reaches 1.2 m. Humus is about 5 - 8%. They are fertile soils and high yields of products. Higher risk of contamination of soils in the study area is from agricultural chemicals, which consist of *chemical fertilizers* used further rates, to increase agricultural products and *pesticides* used to protect these crops from diseases and pests.

Plant and animal world. Geographic location, climatic conditions, relief, water and land property, have contributed to the diversity of plants and animals. In hilly forest areas exist: forests of Gërmenj, of Divjaka, of Grabjani, of Remasi (300 ha)-etc., which in recent years have been damaged by burning and indiscriminate taking down. In Ardenicë, pine forest occupies an area of 24 ha, while in the southwest of Manastir lies an area of 16 ha of oak forest. Lushnja district forests occupy an area of 7408 ha. They provide habitats for birds and wild growth.

Vegetation. Vegetation of Lushnja district is part of the Mediterranean flora, in Mediterranean forest and scrub. Formation of Mediterranean shrubs generation is associated with human intervention, which with its activity has damaged former Mediterranean vegetation. There are cultivated vegetation prevails. Vegetation is characterized by long vegetative cycle. Vegetative cycle starts in June, ending in July, to start again in the fall.

In Lushnja district there are growing and medicinal plants: hollyhock, chamomile, rosemary, clover, poppy seed, nuts, lime, blackberries, onions, garlic, rosemary, parsley, mender, wild violet, willow, white ash, etc. Also there are grown and honey plants: wild clover, marjoram, etc.

[58] Bajraktari, F., Veshi, F., Leka, I.,Garo, R. "Tokat e kripura, me kripezim magnezial, acide, mocalike, ranore dhe permiresimi I tyre, Tirane 1977.

Fauna. Fauna in Lushnje is typical of Mediterranean lowland areas and diverse. Mention here: marine, river and lake fauna; land: wild and treated fauna.

In conclusion we emphasize that: favorable geographical position, near coastal , connected on all types of road land; gentle landscape mostly flat; favorable geological and soils mainly for agriculture; warm climate where be given attention to maximum temperature, especially during the summer, favorable rainfall in winter; artificial irrigation in summer, light winds, vegetation already cultivated in most of the territory, which for some crops includes dual cycles during the year; diverse fauna; create wide opportunity for sustained activity of Lushnja district population. In geographical view interest lies in the adaptation of human activity with the environment and resources that it offers. This adjustment relates to two aspects: to protect against the negative impact of natural factors and rational use of offered natural resources, to achieve sustainable development.

2. Situation of agricultural land fond and farm families

Agricultural economy of Lushnja district is the basis of economic development and is occurred continuously under the influence of human processes. Its dynamics is associated with the evolution of agricultural space, agrarian relations and property information.
In 2007, It was produced on a surface of the agricultural land of 51,109 ha or 71.7% of the entire area of the district or 41.9% of the agricultural land fund of Fier region or 7.3% of the agricultural land fund of the country. Compared to the districts of the county, for the year 2002, in this category it is the second after Fier district, the third in forests and pastures occupied surfaces, and the first in the remaining surfaces. (See. Tab. 1)

Tab.1. Structure of agriculture land in 2002 (in ha, against prefecture)

District	Working land	%	Forests	%	Pastures	%	The others	%
Lushnje	46367	44.1	4708	27.4	440	13	15161	35.9
Fier	48804	46.4	7642	44.4	897	26.6	15156	35.8
Mallakastër	9895	9.4	4825	28	2036	60.3	12000	28.4
Prefecture	105066	100	17175	100	3373	100	42317	100

Due to the geographical position, favorable climatic factors, soil quality, etc., in the district of Lushnja, cultivated grains, vegetables, fodder, mainly in the plains and the different cultures in greenhouses (In district it is planted in about 193 ha greenhouses, equal to 43% of surface in the country). In Lushnja district in hilly areas are cultivated olives, vineyards and tobacco. In tab. 2, It is presented the surface of agricultural land by slope (Tab. 2)

Tab. 2. The surface of agricultural land by slope percentage

The slope %	Agricultural land (ha)	From which			
		Working land (ha)	Trees (ha)	vineyards (ha)	olives (ha)
0-5%	36942 or 72.4%	36737 or 79.3%	141 or 12.4%	62 or 9.5 %	2 or 0.07%
6-10%	2276	2038	58	59	121
11-15%	2735	2359	112	116	148
16-20%	3584	2836	159	175	414
21-25%	1970	974	293	123	580
26-30%	2086	1011	206	15	854
31-40%	1259	311	158	82	708
41-60%	204	52	9	20	123
shuma	**51056**	**46318**	**1136**	**652**	**2950**

Source: Council of Fier Prefecture, Section of Administration and Land Protection (30.12.2008)

In tab. 2, it is shown that about 72.4% of the land surface is under the slope of 5% of the landscape, of which 79.3% are working land, 12.4% of tree land, 9.5% of land with vineyards and 0.07% with olives. All this land, based on and agricultural land use critical threshold of 13-15° slope,

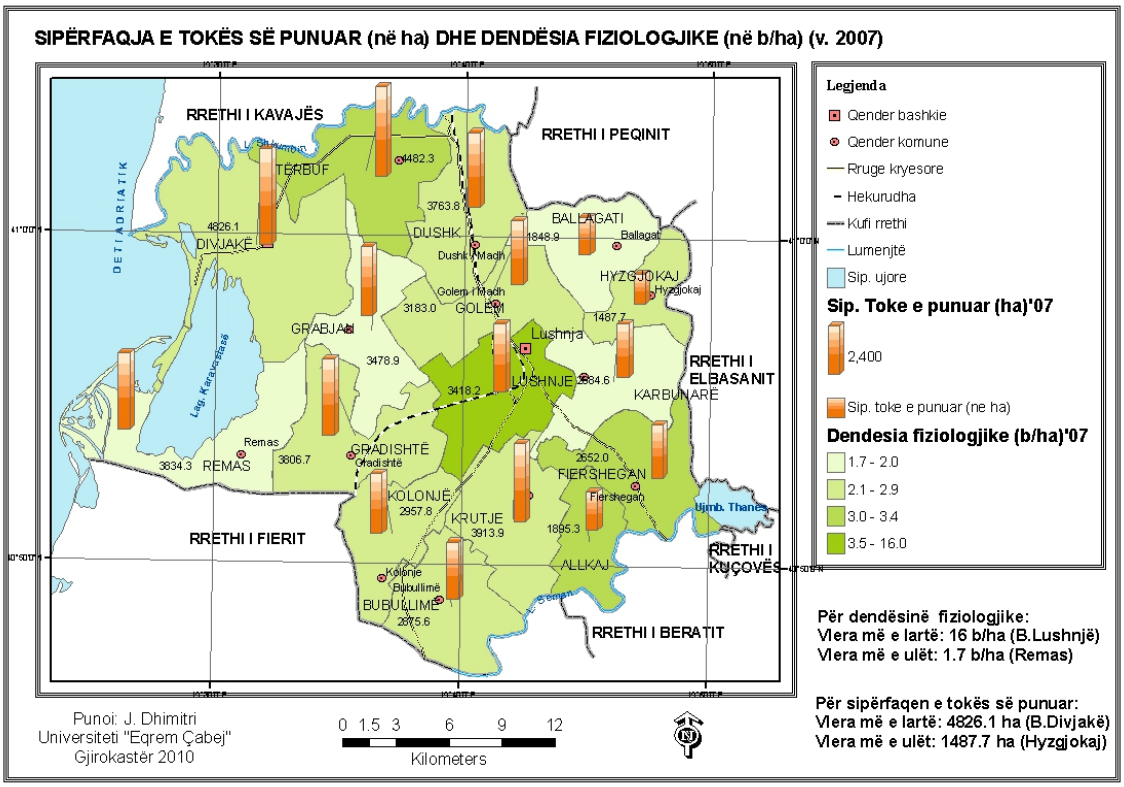
there is no risk of slope processes and soil erosion. For this reason, on greater sloping land surfaces than critical threshold, it is not recommended to replace natural ecosystems with those cultivated. In other categories of slope, but in some cases in the first category are required careful interventions (i.e: to cultivate by contour).

It is noted that all other categories occupy the largest surfaces in the territories that are in greater slope than 5%. However, these areas are more suited to cultivating the above, rather than crops. Farmers during their activity in the cultivation of other crops, vineyards, olive groves, should appreciate this fact.

Tab. 3. Physiological density and farmer families (in 2007, map 1)

Municipalities, communes	physical density (inh./ha)	Working land (ha)	Land for crops (ha)	Tree surface (ha)	Villages	Family 2007	Farmer family	Farmer family (%)
Allkaj	3.2	1895.3	1852.4	42.9	8	1375	1373	99.9
Ballagat	1.9	1848.9	1482.4	366.5	8	842	772	91.7
Bubullimë	2.4	2875.6	2840.6	35	7	1816	1809	99.6
Divjakë(f+q)	2.7	4826.1	4530.3	295.8	9+1	3548	3248	91.5
Dushk	2.9	3763.8	2494.2	1269.6	7	2492	2492	100.0
Fiershegan	3.4	2652	2242.4	409.6	12	2567	2566	100.0
Golem	2.5	3183	3048	135	6	1712	1709	99.8
Grabjan	1.8	3478.9	3426.4	52.5	4	1504	1407	93.6
Gradishtë	2.8	3806.7	3694.1	112.6	10	2539	2539	100.0
Hyzgjokaj	2.4	1487.7	1129	358.7	5	817	791	96.8
Karbunarë	2.0	2684.6	1983	701.6	10	1327	1320	99.5
Kolonjë	2.8	2957.8	2684.2	273.6	9	2138	2138	100.0
Krutje	2.6	3913.9	3868.7	45.2	11	2372	2354	99.2
Lushnje	16.0	3418.2	2864.6	553.6	1	15368	2851	18.6
Remas	1.7	3834.3	3730	104.3	8	1573	1570	99.8
Tërbuf	3.4	4482.3	4432.2	50.1	6	3423	2680	78.3
Rrethi	**3.5**	**51109.1**	**46302.5**	**4806.6**	**122**	**45413**	**31619**	**69.6**

Source: Data processed. Dr. Jostina Dhimitri (Regional Directorate of Agriculture, Food and Consumer Protection Fier. Department of Statistics)



Map 1: Working Land Surface (in ha) and physical density (in inhabitant per ha, 2007)

Population with her presence constantly has exerted pressure on the working land surface. This pressure is expressed through physiological density calculation (tab. 3, Map 1). By municipalities and communes, for 2007, it is higher in the town of Lushnja (16 inhabitant/ha) in communes: Fiershegani (3.4 inhabitant/ha) Allkaj (3.2 inhabitant/ha), Tërbufi (3.4 inhabitant/ha) Dushku (2.9 inhabitant/ha). Lower physiological density values is found in commune of Remasi (1.7 inhabitant/ha) Grabjani (1.8 inhabitant/ha), and Ballagati (1.9 inhabitant/ha). Tab. 3 shows that rural families continue to dominate with over 60% of the population and agriculture is the main occupation option of people work in rural areas. Four communes in which families are totally involved in agricultural activities and livestock are: Dushku, Fiershegani, Gradishta and Kolonja. Only Lushnje municipality has lower values of farm families (18.6%). While as district, farmer families account for 69.6% of families in the district Lushnja stressing the fact that it is a district with priorities in agricultural farming. Employment in agriculture accounted 75.3% of the population busy at work, ranking second after Elbasan district.

3. The position of agriculture and farming in agricultural economy

Due to its geographical position, favorable climatic factors, soil quality, etc., in the district of Lushnja, are cultivated grains, vegetables, fodder (in the field) and greenhouses and arboriculture (olive, vineyards in the hilly area). Communes of Ballagat, Karbunara, Dushk, Hyzgjokaj and Lushnje municipality (partly hilly area) have considerable area with fruit trees.
Tab. 4. Planted areas with agricultural plants (2002, 2007, 2011) (in ha)
In tab. 4 is noted an increase in the planted area with maize, fodder, vegetables (in 2002, 2007, 2011. Areas ranked the first in the country) (Ministry of Agriculture and Food, Department of Statistics, 2003) and a reduction of planted area with wheat, potatoes and beans.

Reducing the areas with some crops is associated with market demand and competition posed by imports of low priced flour. According to the tab. 4, in the study area, the planted area with cereals was reduced from 19,280 ha (1996) to 14509 ha (2002) and 12824 ha (2011). In 2007 the planted area with cereals in Lushnja round pick still in 12917 ha (it occupies 43% of this surface in Fier region and 9.8% of this surface of the country). While increasing the cultivated area with forage is associated with increased demand for feed for livestock.

Olive culture, vegetables, meat and dairy products remain among the strategic sectors of agriculture and livestock development *(Ministry of Agriculture, Food and Consumer Protection, June 2007).* (Tab. 5)

Tab. 5. The production of cereals, vegetables and olive at the district level (2007)

Farming Culture	Production Lushnje (ton)	Production Fier Prefecture (ton)	Production / Production Prefecture (%)	Production Country (ton)	Production / Production. Country (ton)
Cereals	53768	112233	47.9	493639	10.9
Vegetables	91734	138315	66.3	671543	13.6
Olive	2226	4702	47.3	28120	7.9

Processed table. Source: Ministry of Agriculture, Food and Consumer Protection, "Statistical Yearbook 2007"

Lushnja circle stands for the creation of the protected area (in Divjake) as a key requirement for the provision of a product within the EU standards and requirements for eventual export of agricultural products, in our case for potato culture (Ministry of Agriculture, Food and Consumer Protection, June 2007).

Tab.6 see how varying indicators of agricultural products per capita in years (Processed table by author)

Kolonja, Hyzgjokajt, Golem, Ballagatit communes and Divjaka municipality, have been growing

Municipalities, communes	Cereals kg/capita '93	Cereals kg/capita '07	Olive kg/capita '93	Olive kg/capita '07	Vegetables kg/capita '07	Vegetables kg/capita '93
District	**570.0**	**301.2**	**6.3**	**12.0**	**929.8**	**345.7**

vegetable production per capita, which shows that the population in these areas deals with the cultivation of vegetables. Various agricultural crops planted in the open field and in greenhouses. Greenhouse owners number in 2005 was 151 owners and area 20.05 ha (0.5 ha heating greenhouses and 19.5 ha solar greenhouses). While forestry situation is varied. Mention apples, pears, plums, cherries, peaches, apricots, figs, berries, dates, pomegranates, citrus, and olives. Cultivation and their growth is realized mainly in agricultural land and family yards.

Farming is the second branch after agriculture, wherein most of the economy in rural areas. Lushnja district has good conditions for growth and breeding of cattle and poultry. They grow in each the village.

Tab. 7. Livestock products in tons and million eggs (2007)

Livestock production	Production Lushnje	Production Fier Prefecture	Production / Production Prefecture (%)	Production Country (ton)	Production / Production. Country (ton)
Milk	87792	180895	48.5	1015679	8.6
Meats	13398	25387	25.8	157779	8.5
Eggs	25	65	38.5	736	3.4

Tab. 7 there is a high % of district livestock production to livestock production in the country and a assessable % of this country production. Lushnja District remains one of the leading manufacturers in Albania for livestock products. At the county level provides approximately 16.9% of the amount of milk, meat 13.3% and 8.8% of the amount of eggs at the national level.

Tab 8. Livestock indicators per capita[59]

Municipalities, communes	Meats kg/capita '93	Meats kg/capita '07	Milk kg/capita '93	Milk kg/capita '07	egg/capita '93	egg/capita '07
District	**23.0**	**54**	**47.9**	**494.5**	**51.5**	**152.3**

Development of livestock is associated with the growth of cattle, sheep, water and field birds and bees. Livestock products are mainly in milk, meat, wool, eggs and honey. Livestock and agricultural products grown in greenhouses and open fields, fulfill the family needs of the district and beyond. In a general perspective, Lushnja district has priority the agriculture and its development. Versus production reports, and in particular the production per capita, at the regional level and country, it demonstrates a great development of agriculture.

But fragmentation of agricultural land remains a problem, which brings a number of difficulties for the production and marketing of agricultural products, and has made large-scale use of agricultural machinery to be difficult.

Agricultural mechanics represented by a wide variety of machinery plays an important role in agriculture. *Problem remains very high price that owners of agricultural machinery assign farmers to perform agricultural mechanized processes as planting, harvesting and threshing, transport, etc*.

Assisting the agricultural economy, has served since 1955, the Institute for Agriculture and Biology (created by a decision of the Council of Ministers no. 337 dated 08.09.1955) and DCM no. 515, dated 19.07.2006 "On the restructuring of scientific - research institutes under the Ministry of Agriculture, Food and Consumer Protection". It became part of the 5 technology transfer centers (ATTC). The other three are located in: Fushe Kruje, Vlora, Shkodra and Korca.

Conclusion

Evaluating the physical and geographical features of the study area, it is distinguished for efficient and favorable features, towards the development of natural activities of agrarian economy. Climatic conditions, low field relief, the geographical position for marketing of agricultural products, the variety of flora and fauna, etc., create good opportunities to develop economic agrarian activities. From this picture set, there is a significant surface area of working land, which is not vulnerable to natural phenomena that depend on the slope of the landscape, but care should be taken to other potential pollutants as various chemicals and land use excessive. About 20.7% of working land remains vulnerable to erosion and sliding phenomena.

However this agrarian environment remains due to the impact of a range of internal and external factors. Among which are:

a) Internal factors: *the cutting large property and depending on their worthiness, have impeded mechanization, reduced interest in agriculture. * The decline of labor productivity in agriculture, especially for some crops (cereals). *Damage major irrigation and drainage network. *The high price of fuel, chemical fertilizers, agricultural inputs and works with motor vehicles. etc.

b) External factors: *Competition from imported agricultural products. *The impact of the crisis on other sectors of the economy, etc.

Farm families commitments in agriculture remain high, where farm families occupying 69.6% of households in the district Lushnja stressing the fact that it is about farming. Higher physiological density is found in the municipalities and communes that are located near the main road axes as communes; Tërbuf, Fiershegan, Dushk, Golem. Agricultural economy priorities and orientations remain mainly cultivating fruit trees in hilly areas and in greenhouses, olives, forage and livestock development (farm and empower entities for processing products) in lowland areas. The data show positive rates cultivation of vegetables and corn culture. Identification of features different through GIS technologies will create more facilities for quick and efficient decision-making.

[59] Note: Tables for agricultural and livestock indicators for capita are processed, the data are obtained in the Statistical Office of Lushnja district and the Regional Directorate of Agriculture, Food and Consumer Protection, the statistics office in Lushnje.

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