

CHALLENGES FOR THE PROTECTION OF AGRICULTURAL LAND FROM SETTLEMENT EXTENSION AT THE MUNICIPAL LEVEL IN KOSOVO

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SUMMARY

Based on the importance of agricultural land for mankind, and taking into consideration the permanent risks that threaten this precious resource, through this article we will try to contribute to rational land use, identification of risks and taking preventive measures to alleviate this problem at municipality level. A considerable number of settlements lie along flat areas, even including the urban centers whose expansion are done in an uncontrolled manner, always towards high fertility agricultural soil. Therefore, the reduction and degradation of agricultural land by uncontrolled construction and expansion of settlements is a concern that requires proper treatment. Also, the erosion process is a continuous enemy of lands, which requires proper treatment, but also a challenge for protecting this irreplaceable resource.

Key words: *challenge, agricultural land, construction, planning, quality, erosion*

INTRODUCTION

Humankind is connected to agricultural land and its cultivation in order to provide food for ten thousand years. These areas have been considered as an important strategic resource for the future generations, as well (Ramadani, I, 2013). However, in some cases the importance of agricultural land is forgotten because of the need to build and expand settlements, but also the occurrence of vast human activities. In this way, agriculture land is covered with buildings; it is degraded by uncontrolled actions and the important areas are ultimately lost. In the ancient period, settlements in Kosovo used to be built on barren lands and hills. This was the way how arable land was

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protected on one hand, while on the other hand, these settlements were healthier and safer from different social or natural hazards/disasters (Ramadani. I, 2004). The occurrence of land loss and degradation may be found in many countries of the world (Ramadani. I, 2011), Thus, in Kosovo each year 5000 hectares (12.3553 acres) of productive soil by the expansion of settlements and infrastructure as well as by other uncontrolled and unplanned actions taken by humans (MESP, 2011). In the last decade, Kosovo has entered into the phase of a rapid development, especially by building blocks of flats, business building blocks, infrastructure, and settlement expansion while spatial planning as a process was not able to proceed this development.

MATERIALS AND METHODS

Based on the given data by municipalities, case studies, usage of aerial images and maps, GIS program, as well as our calculations, always in the context of exploitation and use of areas at the municipal level, we can conclude that within the territory of Kosovo, municipalities are developing diverse anthropogenic activity, while these activities are constantly in conflict with agricultural lands, which are constantly degraded and lost. In this article we will take the municipality of Shtime, Kosovo as a sample. While this is used as the model, it will also be used as a methodology for solving similar challenges in the other municipalities of Kosovo.

RESULTS AND DISCUSSIONS

In the context of area destination and usage, from total 30 municipalities in Kosovo we have taken as a model the analysis of settlement and other construction development in the territory of Shtime municipality. The analyses consist in minimizing conflicts between settlement expansion and agricultural land. The territory of Shtime has an area of 13.420 hectares, with 33 800 inhabitants, 23 settlements and one urban centre. A number of settlements are spread in the flat area of the municipality, including the urban centre of Shtime itself, while their expansion is done in an uncontrolled way always harming a higher category of agricultural land, as well as along strategic importance corridors. Thus, settlements that expand in hilly and mountainous area are characterized by a slow increase of population or with a tendency of depopulation. The decrease and degradation of agricultural areas caused by construction and settlement expansion are a concern that requires adequate treatment. In these last two decades, the city

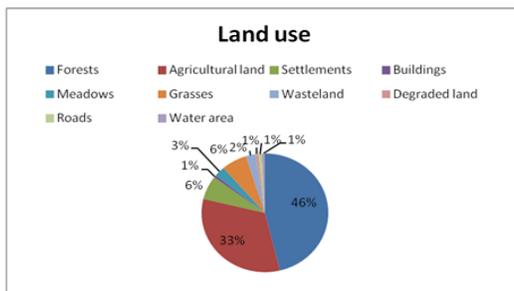
of Shtime itself will cover or degrade more than 100 hectares of agricultural land without counting the loss of the area by other settlement expansion spread on the fields. So, by our uncontrolled actions we are losing the most important strategic resource for the future generations. Calculating the number of inhabitants in relation to agricultural land of I-IV category, we may conclude that there are only 0.13 hectares of agricultural land per inhabitant in the municipality of Shtime.

Regarding fertility, soils of this territory are divided into six classes of fertility and are expressed as follows: 7.3% is second class soil, 13% is third class soil, 11.4% is fourth class soil, and 68% is fifth and seventh class soil. Based on this we can conclude that the possibility of protecting arable land from construction is possible because settlements may expand in a non-arable land.

Agriculture is one of the basic branches of economy and as such, plays an important role in the development of a region or municipality. Circa 48,4% of the territory of Shtime municipality is agricultural land, which means that almost half of the entire municipal territory is wheat land or 1.2% of the territory of Kosovo.(Shtime Municipalities, 2010). According to GIS analysis, 5.609 hectares are farmland, taking into account all the areas covered with wheat, meadows and gardens within settlements. During the analysis of some indicators, such as: terrain slope, exposition, soil fertility, settlement expansion, Shtime municipality is characterized by three agricultural areas: mainly agricultural areas, agricultural and farming areas and farming and forest areas.

Table 1. Land use

Area	ha	%
Forests	6197.3	46.2
Agricultural land	4378.8	32.6
Settlements	863.4	6.4
Buildings	93.7	0.7
Cemeteries	-	-
Meadows	367.7	2.7
Grasses	871.3	6.5
Wasteland	326.3	2.4
Degraded land	98.2	0.7
Roads	118.1	0.9
Water area	105.4	0.8
Total	13420.1	100.0



Grafiku 1. Land use in %

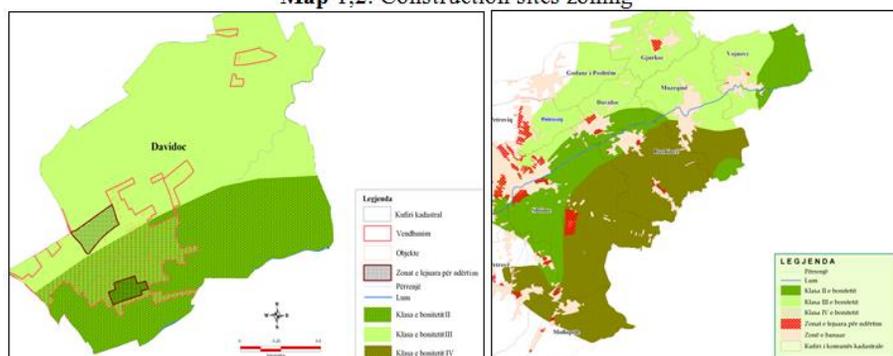
Agricultural land consisting of arable land, gardens and meadow takes a considerable wealth of arable land. This wealth has changed during the last two decades going towards harming these areas. During this period, arable lands and gardens have minimized for 1.736 hectares, caused by construction sites, but even without working on the land and leaving it as wasteland. Nevertheless, expansion of vegetable plantations is a good index

that shows the development of beneficial agriculture, for which Shtime municipality has a great potential and possibility.

What is worth emphasizing is that the level of land parcelization as a negative occurrence in the municipality of Shtime and it is not very different from the overall state in Kosovo. The average size of land parcels is 0.62 ha. From analysis done by GIS we understand that 73% of the parcels in Shtime municipality are with the size of 0.5%, 17% are 0.5 - 1.0 hectares, approximately 7% are with the area of 1 - 2 hectares and only 3% are above 2 ha. Thus, we may conclude that 90% of land parcels in the municipality of Shtime have less than one hectare, which means that this state presents obstacles in the development of modern agriculture.

Regarding spatial planning and future development, a great importance has the treatment of the erosion process. Erosion is one of the most negative occurrences that endangers agricultural land, infrastructure, but also the weal created and planned by humans. This occurrence is present almost in all the municipal territory in various intensity, size and forms. The acceleration of this occurrence in most of the cases is done by people as a result of non-rational usage of agricultural land, uncontrolled illegal logging. The areas which are exposed to medium erosion include 1.989 hectares, or 14.7 % of the municipal territory. High erosion includes an area of 11.4 hectares or 0.08 %, while the highest erosion covers 7.6 % of the territory of Shtime municipality. A more emphasized problem in the low area is arable land of II-IV category invaded by new blocks of flats and construction sites, while this area is for a high priority agricultural development purpose, thus, it should be considered as an area of interest for the municipality.

Map 1.2. Construction sites zoning



The map above shows settlements expanded on the II-IV agricultural land category and the proposed line for their expansion considering agricultural land protection. The proposed definition of construction sites minimizes

conflicts between the agricultural land and settlement expansion. This proposal enables construction on the empty land within settlements and defining ways on settlement expansion towards weaker categories of land V and VI. The protection of land in the agricultural area requires a detailed research of terrain: slope, pedagogical cover of soil, fertility, elevation, terrain geology, etc. Looking from the aspect of slope in this area, biological and mechanical measures should be taken in order to stop land erosion. In arable areas, where the slope is higher than 15%, adequate permanent crops should be planted or afforested. Therefore, it is possible to expand settlements and construction areas with a higher slope of the terrain and barren land.

CONCLUSION

Uncontrolled construction and its remains, industrial remains, the way of land use, wastewater discharge, natural disasters, etc., influence directly on soil quality. Settlements zoning and controlling other activities on agricultural land are necessary actions in order to preserve quality soil. To minimize the conflict between agricultural land and other actions, zoning of business areas, constructing sites and prevention of settlement disperse expansion should be done. Competent officials should identify cadastral parcels in a defined line of zoning, thus adequate measures should be taken to prevent loss of quality soil. By spatial planning, construction sites are defined clearly while settlements are divided by a green area between one another. Thus, modern agriculture can develop in flat areas without any obstacles and mountainous and hilly areas should be developed by tourism and livestock industry. In this manner, uncontrolled spreading and expansion of settlements in agricultural land and efficient protection of agricultural land and agriculture in general would be stopped which would enable functional and compact settlements development. One of the priorities of spatial planning should be to protect quality agricultural land and prohibit constructions on category I-IV soils. Based on priorities and strategic development, competent bodies at the municipal level should take the following necessary precautions:

- Identified agricultural areas of category I-IV should be protected by law, by respecting the defining line of settlement sites.
- Development and regulatory plans for secondary and local centres should be compiled as soon as possible.
- In case of need for settlement expansion, priority should be given constructions to wasteland and low quality agricultural land.

- Gaps between existing settlement border lines should be populated, which would reflect positively in increase of settlement density and compactness.

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