

The Role of Landscape Planning in Sustainable Development (On the example of Khizi Administrative Region of Azerbaijan)

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Abstract

The article is devoted to the importance and necessity of implementing landscape planning in the Khizi administrative region of Azerbaijan. The problem is studied in context of sustainable development, focusing mainly on land resources. As landscape planning is directly related with land resources, and physical and biological environment of soil cover, the research work deals with such issues as the assessment of natural socioeconomic condition of lands, current condition of soil cover, and situation in the land use, the consequences of anthropogenic impact on the nature, variety of soils and differences between them, agricultural importance of lands, and others. Data on land use, and grading of irrigated lands of the Khizi region are analyzed. The author insists on measuring general condition of lands with landscape planning method. The relevant opinions are expressed, and recommendations are proposed.

Keywords: land use, sustainable, environment, pasture, factor, agricultural, forage, anthropogenic

In the contemporary period, sustainable development is an influential factor which determines strategic tendencies in regional policy. The principles of the conception of sustainable development adopted in the Rio-92 Conference "Environment and development" are included into the regional development planning. In this connection, every country has put forward issues of rational management and protection of natural resources in order to provide strategy of sustainable development. These issues are: protection of the atmosphere; land resources planning; enlargement of forest resources; desertification and its management; biodiversity protection; development of rural settlements; use of environmentally secure biotechnologies; protection of pure water resources and keeping their quality; purification of discharged waters; effective management of poisonous chemical substances, etc.

Azerbaijan Republic developed its "National Program on environmentally sustainable socioeconomic development" in 26 December, 2011. The National Plan intends to protect the existing ecosystems and economic development, and rational use of natural resources in the sake of satisfying needs of present and future generations. This activity includes also the more close cooperation on sustainable development of agriculture, the increasing use of optimized planting systems and advanced irrigation technologies in order to prevent land erosion and salination.

As is known, sustainable development is a development that satisfies all needs of present society, and meanwhile does not threaten the capability of future generations. The conception of sustainable development emerged under the influence of two factors. The first factor is that more emphasis is laid upon keeping of condition of environment at "required level" rather than protection of it. This means the protection of the nature from anthropogenic impact intends using of different cleaning technologies, whereas keeping of condition of environment includes the transition to new energy-efficient and material-efficient technologies. Another factor is that environmental protection and solution of socioeconomic problems are weakly coordinated. Reaching the funding on protection of nature is complicated in the condition of free market (R.Mammadov, 2009).

One of considerable components of sustainable development is assessment of natural socioeconomic condition with landscape planning method. This assessment plays subsidiary role in studying transformation of ecogeographical condition of a region, and transformation of landscapes.

Landscape planning is directly related with land resources, effective use of their physical and biological environment. Meanwhile, landscape planning is a system which also allows control current condition of the environment, its importance and sensibility. Due to landscape planning, future measures on developing a region are determined in advance, with considering natural and anthropogenic impacts in the territory. As usual, final stage in this process is the preparation of action plan of recommendation on territorial landscape management.

In European countries, a number of ways such as biodiversity, recreation and tourism, ecogeography and etc. are widely applied. A.Hoppenstedt, V.Vende, A.Antipov, Y.Semyonova and other scientists have indicated the importance of implementing of landscape planning method in order to: prepare bases for activities of environmentally-oriented farms, forestry facilities and water managing subjects; modernize cities and villages; make decision at municipal and inter-municipal scales; conclude agreements on land use and land sale; implement ecological examination.

Meanwhile, landscape planning is regarded as a main means in economic and social activities, and particularly in solution of existing problems relevant to policy on land use. Each natural territorial complex has its specific environment and biological resources in the territory of Azerbaijan. Proper use of these resources and also proper protection of their environmental variety are standing as one of urgent problems. Therefore it is important to study biodiversity and ecological condition in every zone as well as to reveal their role in regional development.

R.Mammadov suggests that landscape planning is a system of recommendations which deals with the keeping physical and biological environment clean. In the process of landscape planning, the database on current condition, importance and sensitiveness of the territory is analyzed and then is systemized. Consequently, preparation of development concept of the territory may be carried out. In this connection, all components of biotopes, land, climate and meteorology, hydrology and hydrogeology, landscape potential and socioeconomic condition may be assessed in detail in terms of relevant importance and sensitiveness. All outcomes are developed in GIS environment.

Soil cover of Azerbaijan distinguishes itself with its composed structure. With the exception of tropical rainforests and savannas, all landscapes typical for the planet, as well as most of climate types are characteristic for Azerbaijan. Different kinds of soil are geographically spread in accordance with regularity of horizontal zoning which depends on altitude of territories. Relief is directly responsible for the differences observed on climate peculiarities, and also plant cover in the country's territory. Climate and plant cover, in turn plays an influential role in the formation of different kinds of soil. Every genetic combination within a zone is characterized with of different subtypes of soils, formed due to local soil-forming factors. It should be particularly noted that the significant part of soil cover reflects naturally and anthropogenically changed landscapes.

The Khizi administrative region characterized with moderate climate and dry air, is situated closer to Baku city in relation to other regions of Azerbaijan. The distance between them is 104 km. Dubrar (2205 m of altitude) is the highest peak in this mountainous and foothill territory. Soil-forming rocks are dated to the Third and Fourth Periods, composed of also the ancient Caspian sediments. Direct determining impact on the formation of soil cover is made by dark black-colored clayey-shale of the Jura Age, gray- and brown-colored sands clays, composed of marl. Meanwhile, the climatic condition changable by zones is also an important factor responsible for the formation of soil cover in the territory.

Table 1: Main Data on Climate in the Khizi Administrative Region

Data on climate	By seasons				Yearly	Periods	
	winter	summer	spring	autumn		warm	cold
Air temperature, degree	0,0	8,6	20,7	11,1	10,1	17,0	2,8
Amount of precipitation, mm	112	135	66	116	430	181	249
Relative humidity of air, per cent	82	72	60	78	73	64	81
Evaporation, mm	86	193	392	168	839	626	213

Compound morphogenic and morphogenetic structures of relief as well as range of geographical peculiarities have led to occurrence of sharp differences in hydrometric regime, metabolism, and other elements and factors in the territory of Khizi. Such condition was responsible for the zone regularity and the formation of a series of soil types as well as variety of their chemical, physicochemical and mineralogical peculiarities. Depending on the natural condition responsible for formation of soil, many types of soil such as turf mountainous and meadow-type, brown mountainous forest-type, soil carbonate and brown mountainous forest-type soils, washed and typical mountainous black soils, dark and simple mountainous gray and brown soils, dark and simple mountainous chestnut-colored soils, partially remained light, and salinized light gray, gray and brown soils, hillock-form sands; stripped rocky areas and series of extrusive soils are spread in the territory of administrative region (G.Mammadov, 2007).

These soils are characterized with evident genetic layers, and depending on their subtypes have 1,5-4,5% humus in their composition. All soils have agricultural importance, but most part of lands are typically used as a source of natural forage, and serve a role of pasture in the territory.

In general, the soil profiles are characterized with high gravelly areas depending on composition of land-forming rocks, relief and gravitation processes. This feature is more evident towards lower layers (G.Mammadov, 2007).

In general, the soil profiles are characterized with high graveled areas depending on composition of land-forming rocks, relief and gravitation processes. This feature is more evident towards lower layers (G.Mammadov, 2007). Agriculture is considered to be one of most influential factors in social and economic development in the region. Agricultural products at 31888,8 thousand Azeri manats (AZN) were produced in the Khizi region, of which 94,6% was contributed by livestock, and only 5,4% by vegetation (Agriculture of Azerbaijan, 2014). Higher share of livestock products was available due to natural climatic condition as well as usable agricultural lands, i.e. hayfields (661 ha, or 91,9%), and also meadows and pastures (84339 ha). It should be noted that due to the large development of field vegetation, natural sorts of plants have been replaced by cultural plants, and forage base of livestock industries has been strengthened in a third part of Azerbaijan's total territory. The implementation of land-protection and agrotechnical measures in the hayfields pastures, particularly at slopes and surficial eroded lands positively affected the fertility management, and the increasing of productivity of pastures in terms of ecology and economic efficiency.

In Khizi, fields and other vegetation places make up 7059 ha, whereas courtyard areas and forest areas make up 358 ha respectively.

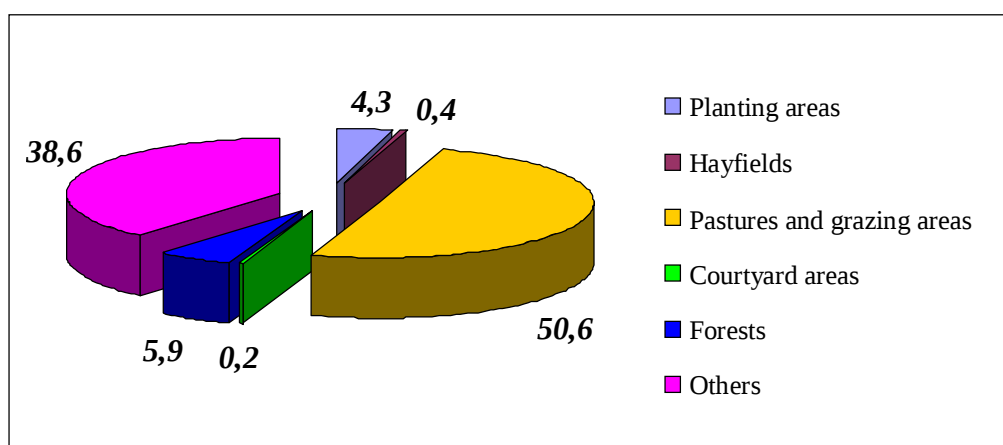


Figure 1: Structure of Land Fund in the Khizi Administrative Region, at Percent

As is seen from Figure 1, lands used in agriculture make up 55,4% of the total territory while other areas (including forests) make up 44,6%. On this figure, "others" include lands of less agricultural importance or those which are conditionally considered as non-usable (64451 ha). Forest are suffered by anthropogenic influence, and vegetation cover faces threat of extinction in this territory. Land-keeping importance of forests is measured with density of trees. However, lack of proper economic activity, the unorganized and unregulated pasturing, the illegal implementation of plowing at hard slopes, and also rainfalls which may occur at slopes, are responsible for the occurrence of erosion and the fall of upper limit of forests in Khizi. In this connection, forest-keeping and forest-protecting actions of meliorative importance are necessary in order keep the lands safe.

Currently, 2047 ha of the agricultural lands are irrigated, of which 96,6% fall to the share of planting areas, and 3,4% to courtyard areas in the region. Depending on the meliorative condition, 2% of irrigated lands are evaluated as "good", 68% as "bad", and 30% as "less-satisfactory" in terms of depth of subsoil waters and mineralization degree.

Deepness of subsoil waters is 3 m at irrigated areas, and mineralization grade is 3 g/l.

In recent years, agricultural advantages and interests of settlements are taken into consideration when using lands in Europe.

As for Azerbaijan, though considerable advancements have been reached concerning nature management, still lands of agricultural and forestry importance are not being properly used in terms of environmental requirements. In this regard, it is notable that landscape planning must be widely applied when preparing the conception of sustainable development.

Meanwhile, environmental policy and regional development must be considered as one of priorities of the government in the next future, and must include action plan on land use for each region. Besides this, general condition of lands should be measured by landscape planning method. Such action would promote the realization of mechanisms of sustainable development. In order to reach this aim, the following actions should be implemented as well:

- Concept of sustainable use of natural resources must be prepared;
- Natural environment, its social-economic condition and structure, and also peculiarities of land use must be considered;
- Assessment of lands must be carried, based on investigation of sensitiveness level of the territory;
- Natural and spatial structure of land use from economic view should be determined.

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