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ISSUES OF OPTIMIZATION OF GEOECOLOGICAL SITUATION IN FERGANA VALLEY

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ABSTRACT:

The article discusses the issues of scientific and methodological research on the optimization of the geoecological situation in the region, the choice and development of specific methods that allow to generalize, process and analyze a variety of information about them.

KEYWORDS: geoecological situation, optimization, functional-structural, typology, classification, research methods, landscape analysis.

INTRODUCTION:

Scientific and methodological research on the optimization of the geo-ecological situation in the region requires a focus on the selection and development of specific methods that allow to generalize, process and analyze a variety of information about them. This study is based on the methods available in the field of economic and social geography, the types of research that correspond to the goals and objectives. These methods are based on the widespread use of functional-structural (structural)-hierarchical (hierarchical) approach. In this regard, special attention is paid to the typology and classification of the object. In this case, typology means the identification of similarities and differences between the various objects under study and the separation of their generalized groups, and classification - the separation of types (objects) by their similar classes. When they are understood in this way, they serve not only as the first and second stages of scientific knowledge of the system of objects under study, but also as the first and second stages of socio-economic (geoecological) zoning, which is a high level of scientific knowledge.

Typology and classification as a method of geographical systematization, provides a collection, analysis and synthesis of scientific facts, allows to determine the characteristics of the optimization of the geoecological situation in rural areas.

In the next stage, various geographical and economic methods (e.g., information processing, comparison) are used to determine the typological and classification characteristics of objects. Calculations on rural areas, geo-ecological situation, and optimization of geo-ecological situation can be given in absolute terms and percentages, per unit area, per capita, per unit time. On the basis of such approaches, the types and classes of objects are identified and they are directed to the development of tactical and strategic ways and directions of studying the optimization of the geo-ecological situation in rural areas.

THE MAIN PART

In this study, the socio-economic (geoecological) zoning of the geo-ecological situation in the region is used as a method of processing, generalization and systematization of various information about these areas. In the socio-economic study of the socio-economic development of rural areas and the general characteristics of the causes of geo-ecological problems associated with them, it is important to identify areas for analysis of key indicators.

To analyze the geo-ecological situation in the region, first of all, the natural landscape features of rural areas are studied and evaluated. The need for a landscape approach to overcoming geo-ecological problems in the use of nature in rural areas is noted by many geographers (Alibekov, 1992; Kochurov, 1999; Isachenko, 2001; Korytnyy, 2006; Orlova, 2006, Kuzibaeva, 2006).

The importance of the theory of "geo-pairing" developed by L. Alibekov (1992) in the change of geo-ecological conditions is taken into account. In other words, from the geomorphological point of view, the amount of "matter and energy" transferred from the above-mentioned landscape types to the below-ground landscapes is taken into account.

The main goal of the study is to diagnose and predict changes in the geo-ecological situation in the region. In this regard, the methodology of ecological balance of the administrative territory, developed by BI Kochurov (1999) and used in practice in Russia, is also used.

The history of the study of landscapes in the Fergana region has been thoroughly studied by A. Khamidov (2006). Using the results of this study, the latest research work in the valley was used to separate the foundations of the landscape (Abdulkasimov, 1983; Babushkin et al., 1985; Khalikov, 1989; Maksudov, 1996; Boymirzaev, 2000; Kuzibaeva, 2006; Abduganiev, 2007).

In studying the geoecological situation, attention is paid to geomorphological indicators based on the closed orographic conditions of the Fergana region. At the same time, it was noted that the role of the hydrogeological factor in the negative change of soil-ecological conditions is increasing. In irrigated areas, groundwater levels are rising and soil salinity is increasing. It should be noted that from a geographical point of view, the above factors have also had a positive and negative impact on the location and formation of villages in a timely manner. Factors that have a positive impact on the conditions of the Fergana Valley:

- The presence of plains with fertile soil;
-Supply of water resources;
- Sufficient argo-climate resources;
-Favorable economic geographical location and communication.

In turn, areas with fragmented hills and mountainous terrain, arid desert areas with arid climates, had a negative impact on the location of villages. Such an approach in the assessment classification is also taken into account in the study of the geoecological situation and its changes.

In the study of landscapes in the Fergana region, A. Abulkasimov (1983) distinguishes heights. As in the whole valley, in the territory of Fergana region there are 4 stages. In the works of K. Boymirzaev (2007) landscapes of the Sokh oasis were obtained, and in the plains these landscape complexes are divided into three parts (groups of urochishe). Young researcher O.Kuzibaeva (2006) divides the landscapes of this region into three sloping landscape microzones. Research conducted by O. Abduganiev (2008) also shows that the territory of Fergana region is divided into 5 landscape tiers.

Landscape types in the region are divided into 5 geoecologically homogeneous (similar) groups, and each group is given an appropriate score (Table 1-5) depending on the degree of change in the natural landscape composition of the area. The data are taken from the references on the distribution of the land fund by lines (Land Fund of the Republic of Uzbekistan 0.1 2010; Form No. 22).

Initially, the amount and share of lands belonging to the category of “ecological base” landscapes, in which all components of the landscape have not changed, were studied. The fact that the impact on the atmosphere, soil, water, flora and fauna in the territory of this group of landscapes is minimal in rural areas is the basis for evaluating this group with 1 point. The group includes the total forest area in column 22 of row 33 of the district land fund, including protected trees (23), terraces (24), shrubs (25); The underwater lands in column 26, including rivers and streams (27), lakes (28), reservoirs (29), canals, collectors, and ditches (30); and other lands not used in agriculture in column 34.

In determining the category of partially changed "underutilized" landscapes in the region, the gray lands of column 9 of row 33, hayfields of row 10, pastures of row 11 and lands of reclamation construction in row 21 are studied and the level of change of this group is evaluated by 2 points.

The group of changed landscapes in Fergana region consists of "perennial forests". In determining these landscapes, the total of perennial trees in column 4 of row 33 of the land fund, including orchards (column 5), vineyards (column 6), mulberries (column 7), along with other perennials (column 8) areas of land occupied by orchards and other fruit trees (column 17) were analyzed. In this group, all components of the landscape will be naturally altered. However, the natural landscapes in this group will change for the better. Therefore, the degree of change of group landscapes is evaluated by 3 points.

The most changed, environmentally hazardous, strongly altered areas in the region as a result of economic activity are agroirrigation landscapes. These areas are characterized by soil and water pollution and the extinction of natural flora and fauna. The area of such landscapes is determined by studying column 3 of line 33 of the land fund reference and the amount of irrigated arable land in the plots (column 16) and they are evaluated with 4 points.

In rural areas, the most environmentally hazardous, degraded landscapes are landslides, which are rated at 5 points according to the degree of change. This category includes land occupied by buildings (column 18), roads and trails in districts (column 31), streets, courtyards and squares (column 32), lands under public buildings (column 33) and agricultural lands. category includes other lands not used in agriculture (column 34).

Table 1 Classification of landscapes by geoecologically homogeneous groups

T/r	Name of geoecologically homogeneous groups	Land types corresponding to the group (according to Figure 22, line 33)	Level of ecological change	Coefficient of change rate	In the province weight, (as a percentage)
1	"Ecological base" landscapes	Forests, shrubs, underwater and other unused lands	Unchanged	1	35.2
2	Less used landscapes	Gray lands, hayfields, pastures, lands in the state of reclamation construction	Partly changed	2	1.5
3	Perennial woody landscapes	Orchards, vineyards, mulberry groves	Changed	3	8.5
4	Agroirrigation landscapes	Irrigated arable lands, gardens	Strongly changed	4	43
5	**"Seleteb landscapes"**	**Various infrastructure, housing, streets, squares and other lands**	**Broken**	5	11.8

The second indicator of the degree of change in the natural landscape of rural areas was the degree of change in the irrigation system in river basins. The following methodological principles were followed in the evaluation of these indicators based on the basin approach. First, in the use of water resources, it was taken into account that irrigated areas of rural areas receive water from historically formed natural river basins, i.e., villages are located along their own canals. The area of villages located in the conical confluences of the river, formed over many years, is considered to be the most geoecologically favorable, with the highest score. The rate of change in the natural composition of these regions is assumed to be

1.0, i.e. the results obtained are multiplied by 1.0.

Second, villages of inter-basin importance built in the last century, mostly in the basin of irrigation canals flowing from east to west in the province, include areas with an average geoecological score. Such rural areas are characterized by a high probability of occurrence of negative processes such as soil salinity, rising groundwater levels. Therefore, the number of districts located in this area is increased by a factor of 1.2.

The third case related to the irrigation system in the region is in the areas irrigated by pump. As N.F. Reimers (1990) pointed out, pump irrigation is a “surgical” intervention in nature. Such an irrigation system leads to an increase in the cost of agricultural products, in addition to the occurrence of processes such as soil erosion, washing of the humus layer, secondary salinization in existing rural areas. Therefore, pump-irrigated areas in the region are multiplied by a factor of 1.4 as the areas with the highest variation in the natural flow of the river.

Assessment of processes related to the use of water resources is carried out in a cartographic manner. The area of rural districts in the region is divided into three groups according to the above criteria. Rural districts in the first group include areas irrigated by pump. The highest rate of change in river flow is typical for this group of districts. Adyr parts of Quvasoy city, Fergana, Kuva, Uzbekistan districts, which are usually located in the hill landscapes, are included in this group. The second group includes the regions of the region in the irrigation system of the Greater Fergana, Southern Fergana, Greater Andijan, Karkidon canals, Karkidon, Kurgantepa reservoirs. This group includes the main irrigated arable lands of the region. These areas have an average rate of change in river flow. The third group refers to rural areas that receive water from ditches infiltrated into the natural landscapes of the conical distribution of the rivers Isfayramsay, Margilansay, Sokh. Rural areas in this group have the lowest rate of change in river flow and are geoecologically very stable.

It is not correct to take the indicators of agricultural anthropogenic pressure (KHAB) as the main indicator of economic anthropogenic pressure in the region (Kravchenko, 1986; Kochurov, 1999; Ahmadaliev, 2007). This is due to the fact that in the context of Uzbekistan, the distribution or planning of agricultural anthropogenic pressure through mineral fertilizers and toxic chemicals, agricultural machinery and tractors, centralized management, corresponding to the agrochemical, agro-technical indicators. These indicators are not determined by geographical factors, but by the agricultural system, the composition of crops. Moreover, in this study, we are not talking about agricultural anthropogenic pressure, but anthropogenic pressure in rural areas. In addition, the agro-demographic pressure indicators we want to propose also represent farm anthropogenic pressure in rural areas. This is because changes in population indicators, in turn, lead to changes in economic indicators (Lopatina EB, Poksheshevsky VV 1961; Myagkov, 1995; Petrova, 1997; Zhumakhanov, 1998; Elizbarashvili NK, i dr.2006; Dvinskix S.A. and .dr.2007).

The calculation of the most optimal demographic capacity of the region through the analysis of population density was originally proposed by P.P. Semenov Tyan-Shansky. He emphasizes that the demographic capacity of a region depends not only on the natural conditions of the place (relief, climate, soil and its irrigation), but also on the level of development of productive forces and the type of farm. He writes that any region, province or country with certain natural and economic conditions has a limit that can accommodate the population, after which the desire of the local population to move from here will increase.

EB Lopatina, VV Pokheshevsky (1961) summarize the data on the geography of the population of the CIS countries on the concept of "capacity of the region." The demographic capacity of a region is the maximum number of people who can live in a particular area and use its resources to obtain adequate livelihoods. The capacity of the area is determined by the maximum possible density of the population, which depends on the level of development of productive forces, type of farm and natural conditions.

SM Myagkov (1995) argues that in order to save humanity from the expected socio-ecological catastrophes, it is necessary to move to an ecologically sustainable development path as an alternative to today's development, but still the amount of anthropogenic pressure should remain within the demographic capacity of the region.

EG Petrova (1997) proposes a method of calculating the demographic capacity of the territory of the subjects of the Russian Federation in the transition to an ecologically sustainable development of nature management. A specific way was chosen in calculating the amount of demographic pressure. In Russia, in 1913, during the period of development of organic farming, 1 ha of agricultural land was compared to the number of people fed by the husband, and today's figures of these figures.

Sh. Jumakhanov (1998), N K Elizbarashvili, D. A. Nikolashvili (2006) proposed new directions of population density calculation. In his research on improving the territorial composition of the population in the administrative districts of Namangan region, Sh. Jumakhanov proposed to calculate the population density by river basins, while Georgian scientists tried to calculate the population density by landscape types and subtypes they do.

Consideration of these indicators as an indicator of the geo-ecological situation allows not only to assess the current situation, but also to predict its future.

This approach leads to the following conclusions on the subject:

First, in accordance with the requirements of the 1992 UN Conference on Development and the Environment in Rio de Janeiro on Sustainable Development, the rational use of nature, taking into account the needs of present and future generations (without allowing depletion of resources), ensure that it is at an acceptable level required. In this regard, it is important to know the "feeding" landscape capacity, the optimal (optimal, most appropriate, most suitable) population density.

Second, along with the increase in population density in rural areas, there will also be an increase in the amount of anthropogenic pressure on natural resources. In areas of high density, intensive economic development, the amount of anthropogenic pressure on land, water, atmospheric air, flora and fauna will increase accordingly. At the same time, demographic pressure can be considered as an integral indicator of the impact of the economy and the population on nature.

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