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GEOGRAPHICAL AND ECOLOGICAL-LANDSCAPE FOUNDATION OF THE SUSTAINABLE USE OF LAND RESOURCES IN AZERBAIJAN

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SUMMARY

In the South Caucasus Region, Azerbaijan holds considerable strategic importance due to its favorable geographic location, rich natural conditions, and abundant natural resources. The country stands out for its beneficial physical-geographical and economic-geographical characteristics. Therefore, the study comprising ecological-landscape and geographical-spatial conditions of Azerbaijan is of greater practical importance for the proficient organization of population settlement and economic sector management, ensuring regional development and landscape planning. The relevant research aimed to examine the scientifically grounded methods for the efficient utilization and management of land resources within the framework of market land relations. The study especially focused on the Sheki-Zagatala economic region of Azerbaijan, which provides a comprehensive analysis of the geographical and ecological landscape conditions affecting land use. The analysis effectively identified the natural constraints on land-related economic activities and also evaluated the ecological landscape and geographical potential of the area at the individual administrative districts and the economic region as a whole. Based on the results, scientifically approved recommendations have surfaced to ensure the sustainable spatial development of the study areas. The proposals include land consolidation, optimization of territorial structure, expansion of soil conservation and ecosystem-based approaches, and the implementation of adaptive and integrated management mechanisms grounded in landscape planning.

Keywords: Land resources, landscape planning, sustainable land use, ecological-landscape conditions, geographical-spatial conditions

Key findings: Azerbaijan's strategic location and rich ecological landscape conditions play a crucial role in managing sustainable land use and regional development. The study based on the Sheki-Zagatala economic region provides a sound basis for settlement planning, functional zoning, and land resources management.

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INTRODUCTION

Ecological stability must be preserved in nature to provide a favorable environment for enabling self-regulation functions. In this regard, the value of nature should not simply be as an object of exploitation but more as a considerable system with inherent regenerative capacities (Mammadov, 2016). Soil, as a means of production, cannot be separated from the natural complex, nor can it be treated independently. Being a living entity, soil possesses self-recovery abilities and enunciates various characteristics that are naturally renewable. By using the soil properly, it can maintain its fertility and even enhance and restore the physical degradation (Aliyev, 1982).

In agriculture, soil is the primary and pivotal means of production, with its most critical feature—fertility—utilized through various ways. From this perspective, efficient soil use plays a crucial role in the development and sustainability of cropping systems (Gurbanov, 2025). Similarly, as a unique natural object and as an obligation, soil requires special protective measures. Therefore, the development of geographical and ecological-landscape foundations for the sustainable use of soil resources holds significant scientific and practical importance in Azerbaijan.

Modern soil use has become a complex spatial-organizational system reflecting the considerable interactions between human economic activities and natural components. Agricultural enterprises became distinguishable by ecological, spatial, natural, and economic conditions. By combining these factors harmoniously, the ecological indicators of the enterprise become sustainable, with profitable economic indicators and efficient spatial conditions. Otherwise, various deficiencies may emerge in land utilization.

In spatial planning, the evaluation of ecological landscapes and geographical conditions plays a key role in the scientific justification of management decisions (Budagov, 1988). Therefore, through comprehensive evaluation of ecological landscapes and geographical conditions, it determined agricultural activities with natural limitations, assessing potentials of a territory and establishing the conformity of land-use structures to natural conditions (Guliyev, 2022a, 2022b; Gurbanov, 2025). Azerbaijani researchers, including Aliyev (1982), Budagov (1988), Guliyev (2004, 2026), and Mammadov (2016), have conducted the required studies in the areas of nature conservation, soil protection, and fertility enhancement, as well as in improving the efficiency of land use through landscape planning.

Modern landscape planning differs from traditional spatial planning, which emerged in the 20th century, in terms of objectives, implementation technologies, various approaches, planning scale, and structure of the information base. Currently, the landscape planning sought the management of ecologically sustainable, socially inclusive, and multifunctional landscapes. These requirements of modern landscape planning have gained consideration in the presented study.

MATERIALS AND METHODS

In this study, the research object was the Sheki-Zagatala economic region. This economic region sits in the northwestern part of Azerbaijan and encompasses the southern slopes of the Greater Caucasus Mountains, as well as areas along the Ganikh-Ayrichay Valley (Geography of the Republic of Azerbaijan, 2015). Within the geographical boundaries of the economic region, the administrative districts of Balakan, Gakh, Gabala, Oghuz, Sheki, and Zagatala comprised the region. Most of these settlements form the foothill zones and the river valleys. The total area of the Sheki-Zagatala economic region is 8,840 km², with a population of 629,000. The average population density is 71 people per km² (Statistical Yearbook, 2026). The region covers 10.21% of the territory of Azerbaijan and accounts for 6.15% of its population.

Given its location on the southern slopes of the Greater Caucasus Mountains, the relief of the area mainly comprises mountainous and foothill zones. In this

research work, several physical observations, analyses, and economic-statistical methods, as well as the Geographical Atlas and Landscape Maps of the Republic of Azerbaijan, entailed usage (National Atlas, 2014; Landscape Map, 2017; Geographical Atlas Map, 2018).

Statistical analysis

All the recorded data based on various parameters entailed procurement and formulation based on cadastral and statistical data for 2026 (Statistical Yearbook, 2026; Land Reports, 2026).

RESULTS AND DISCUSSION

Geographical conditions of land use

The study based on the geographical conditions of land use, following land reforms in Azerbaijan during 1996–2000, revealed enterprises engaged in agricultural production often reached establishment without fully accounting for the necessities of landscape planning. One of the key principles in landscape planning is that the width of arable fields should range from 500 to 600 m, the length from 1200 to 1500 m, and the field sides' ratio should be 1:2. These dimensions provide favorable geographical conditions for the productive use of agricultural machinery. Recent studies enunciated the area of cultivated fields should approximately range from 60 to 90 ha (1200 m × 500 m; 1500 m × 600 m) (Guliyev, 2026). The research disclosed that approximately 60% of arable lands comprised plots up to 1 ha, and 90% consist of plots up to 3 ha (Guliyev and Guliyev, 2021). This study analyzed the dependency of cultivation costs of agricultural crops on the size of land parcels (Table 1). As shown in Table 1, the cost variability coefficient for cereals cultivated on 2 ha was 1.171, while for 40 ha, it decreased to 1.016, representing a reduction of 155 points.

For leading crops, such as potatoes, cotton, tobacco, and vegetables, for 2-ha plots, the cost variability coefficients were 1.100, 1.161, 1.148, and 1.125, respectively, in Azerbaijan's agriculture (Guliyev, 2004). When the cultivated area reaches 40 ha, the coefficients decrease to 1.010, 1.019, 1.015, and 1.015, respectively. As a result, increased cultivated area from 2 ha to 40 ha leads to a considerable reduction in the cost coefficient by 90 points for potatoes, 142 points for cotton, 133 points for tobacco, and 110 points for vegetable crops.

With the implementation of land reforms in the country, the analysis revealed land plots allocated to citizens, located at a considerable distance from their permanent residences, ranged from 1 to 15 km, and in some cases, even more. For Azerbaijan, the dynamics of production costs for major agricultural crops have had studies in relation to the distance from entrepreneurs' residences. The formulations showed the land plots' location at such distant sites increased the production costs of agricultural products by an average of 10%–32%, depending on the crop type and the distance from residences (Table 2).

Based on analysis conducted in the district, among the 40.566 allocated land parcels, 1.874 parcels (4.62%) have widths of up to 10 m, 4.095 parcels (10.09%) have widths between 10 and 20 m, and 12.864 parcels (31.71%) fall within the width range of 20–50 m (Guliyev and Guliyev, 2021). Overall, approximately half of the allocated parcels have a cultivation width of up to 50 m, which can considerably be one of the main factors negatively affecting agricultural productivity and the mechanization potential.

Agricultural production predominantly relies on the foreign-manufactured machinery in Azerbaijan. On machinery productivity, the influence of spatial conditions has reached systematic analysis through time-motion studies, establishing the primary patterns governing variations in tractor unit efficiency in relation to furrow length and plot dimensions. The results of chronometric observations conducted to assess the productivity of the SAMPO ROSENLEW SR-2055 grain harvester relative to field working strip length appear in Table 3. The results revealed that when strip lengths were below 500 m, the harvester productivity and shift time utilization showed a

Table 1. Coefficients of variation in cultivation costs of various crops based on the contour of arable lands.

Crops	Contour of the planting area(ha)								
	2	5	10	15	20	25	30	35	40
Cereals	1.171	1.145	1.105	1.078	1.051	1.037	1.027	1.020	1.016
Potatoes	1.100	1.083	1.060	1.042	1.029	1.018	1.014	1.010	1.010
Cotton	1.161	1.135	1.099	1.072	1.051	1.035	1.026	1.020	1.019
Tobacco	1.148	1.123	1.093	1.067	1.045	1.032	1.023	1.018	1.015
Vegetables	1.125	1.105	1.078	1.057	1.040	1.028	1.020	1.016	1.015

Table 2. Dynamics of variations in production costs depending on the distance from the entrepreneur's place of residence to their land, expressed as a percentage of total costs.

Crops	Distance (km)								
	1	5	8	10	11	12	13	14	15
Cereals	2.2	6.9	10.5	12.9	14.1	15.3	16.5	17.7	18.9
Potatoes	3.0	7.3	10.5	12.6	13.7	14.7	15.7	16.7	17.8
Cotton	2.5	8.1	12.0	14.4	15.6	16.7	17.9	18.9	20.0
Tobacco	2.3	5.3	7.6	9.2	10.0	10.8	11.7	12.5	13.3
Vegetables	10.1	21.4	28.8	33.3	35.3	37.3	39.2	41.0	42.7

Table 3. Productivity of the harvesting unit based on technological conditions.

Length of the furrow (m)	Working time utilization coefficient	Time loss due to turning maneuvers and empty travel (%)	Average operating speed of the machinery (m/s)	Productivity per hour (ha/hour)
100	0.58	42	1.98	1.27
200	0.64	36	2.08	1.47
300	0.68	32	2.13	1.60
400	0.73	27	2.15	1.74
500	0.77	23	2.16	1.84
600	0.80	20	2.17	1.92
700	0.82	18	2.17	1.97
800	0.83	17	2.18	2.00
900	0.84	17	2.19	2.04
1000	0.84	17	2.19	2.04
1100	0.84	16	2.19	2.04
1200	0.84	16	2.20	2.05

significant decline, confirming that this equipment was inefficient for small-sized fields. For strip lengths of 100–300 m, time losses due to turning and empty travel account for 32%–42% of shift time, adversely affecting the overall operational efficiency (Guliyev, 2004).

The strengthening of the land market, small-farm cooperation, and land consolidation are strategically important. Accordingly, the state authorities and municipalities received recommendations to systematically encourage joint agricultural operations, which facilitate the voluntary formation of cooperatives through favorable legal and economic conditions, support their sustainable functioning, and promote cooperation within the agricultural sector. Therefore, the establishment of legal and economic mechanisms should result from relevant normative acts to consolidate small land shares. Land consolidation implementation must be within landscape planning projects based on the technical, economic, and ecological principles.

Recent years have witnessed significant rural-to-urban migration in Azerbaijan, influencing land relationships. Wealthier urban individuals often acquire large plots from migrants, primarily for speculative resale rather than agricultural use. Such long-fallow lands increase the risks of land monopolization and market imbalances. Therefore, Azerbaijan's land legislation should address these issues by applying appropriate regulatory measures to stabilize the land market.

Ecological-landscape conditions of land use

The arable lands' share relative to the total area seemed one of the key indicators for maintaining the ecological balance of landscapes. According to recommendations by ecological scientists, the comparative load of arable lands should not exceed 60% of the total area within a landscape, while the optimal range was between 40% and 45% (Seratirova *et al*., 2012). The results further revealed the actual values of this indicator were 14.07% for the Balakan District, 12.64% (Zagatala District), 13.72% (Gakh District), 34.11% (Sheki District), 17.64% (Oghuz District), 17.04% (Gabala District), 20.28% (Sheki-Zagatala economic region), and 21.8% for the country as a whole.

Existing statistical data appear both for Azerbaijan in general and for the districts included in the study area; the arable lands' proportion in the total area was relatively low. This situation can be because the country's territory, including the Sheki-Zagatala economic region, has its location primarily in mountainous and sub-mountainous zones with complex terrain. Moreover, a considerable portion of the land fund comprises natural meadows and pastures, mountain massifs, valleys, and ravines.

Nevertheless, despite the limited coverage of arable lands, the present level of their utilization cannot yet receive a satisfactory rating. In addition, the salinization, sodification, desertification, and erosion processes are also widespread in a significant part of the arable lands across the country. The cases of illegal construction of residential and non-residential facilities were also evident on the agronomic lands. Therefore, the existing situation necessitates further robust application of legislative mechanisms in the field of land relations regulation, as well as strengthening the monitoring and control mechanisms.

Enhanced share of perennial forages

In mountainous and foothill zones with low-fertility soils, increasing the share of perennial forages in the sowing structure is significant ecologically and agro-technically for protecting the fertile layer from water and wind erosion and for improving soil fertility. Therefore, a recommendation materialized to expand the cultivation of perennial forages in crop rotations and raise their relative share in the overall sowing structure to 30%–35% (Seratirova *et al*., 2012).

Analysis of the 2025 statistical data enunciated that the relative share of perennial forages, such as vetch and clover, in the sowing structure was 20.1% in the Balakan District, 32.3% (Zagatala), 7.7% (Gakh), 6.7% (Sheki), 5.6% (Oghuz), and 4.7% in Gabala. On average, across the Sheki-Zagatala economic region, the perennial forages' share was 11.6%, while for the country as a whole, it reached 22.5%. Overall, only in Zagatala District does the share of perennial forages in the sowing structure approach the recommended level, whereas in other districts, it remains significantly below the normative threshold.

Within the boundaries of the Sheki-Zagatala economic region, the vast majority of allocated land plots were small, typically not exceeding three hectares (Guliyev, 2004). The excessive fragmentation and small contours of privately owned land plots, particularly under monocultural cultivation, dedicated land solely to perennial forages are economically inefficient for farm enterprises. With the absence of crop rotation on small-contour plots, this also develops serious limitations for expanding perennial forage sowing, which is generally not distinctly high profitable.

The integrated effect of these factors has led to an increased intensity of erosion processes on research area slopes, with a decline in soil fertility and the spread of negative consequences of these processes over increasingly larger areas over time. In this context, to ensure soil protection and sustainable land use, special attention should focus on increasing the relative share of perennial forage sowing areas within the overall crop structure. The relative load of natural forage lands on agricultural soils is one of the vital indicators for assessing the ecological stability of agrarian landscapes. According to existing recommendations, the relative load of natural forage lands on agricultural soils should not be less than 30% (Ryumin, 1990).

The analysis of land cadastre data revealed the relative load of natural forage lands on agricultural soils was 29.92% in Balakan District, 44.28% (Zagatala District), 66.22% (Gakh District), 45.46% (Sheki District), 54.07% (Oghuz District), and 50.29% in Gabala District. For the Sheki-Zagatala economic region, the natural forage lands were 49.32%, while at the national level, the said indicator was 67.3%. The ecological stability coefficient of natural pastures was relatively high (K = 0.68), with their distribution areas considered ecologically stable. Nevertheless, exceeding the normative limits of natural forage lands on agricultural soils leads to the restriction of other necessary agricultural areas, particularly arable lands.

In this regard, the improvement of summer and winter pastures, as well as peri-urban grazing lands, increasing their productivity, and ensuring their ecologically sustainable use should be a priority. On the total area, the forests share varying within the range of 15%–20% tended as normal in terms of the ecological balance of the landscape (Seratirova *et al*., 2012). In this respect, the Sheki-Zagatala economic region belongs to the group of areas with favorable conditions.

The relative share of forests across the country was 12%; in the Sheki-Zagatala economic region, this indicator reaches 30.79%. The distribution of forest cover by districts was as follows: Balakan (49.1%), Zagatala (38.07%), Gakh (29.25%), Sheki (16.52%), Oghuz (37.97%), and Gabala (32.40%). Therefore, measures for the protection of forested areas in the region should entail strengthening. Likewise, forest belts along the gullies, ravines, and valleys; forest-park massifs; roadside plantations; reservoir adjacency; and riparian forest belts require systematic designing and establishment.

Forest belts' share in the crop structure

The gully-ravine system formed in the study area, steep slopes, uneven seasonal precipitation patterns, heavy downpours, and the occurrence of robust damaging winds make the design of field-protective forest belts one of the key elements of landscape planning. According to existing scientific recommendations, the field-protective forest belts area should not be less than 4%–5% of the total arable lands (Plugatar and Koba, 2014). However, in the study area, this indicator varied between 1% and 2%.

In the study area, a critical need to establish new forest belts over hundreds of hectares is essential. However, allocating land for these forest belts from arable plots, which occupy a relatively small share of the total area, shows challenges under the current farming conditions. In particular, farms composed of small land shares make the practical establishment of field-protective forest belts impracticable. Design guidelines for field-protective forest belts recommend that, depending on the terrain and soil types, primary belts require spacing of 200–600 m apart and secondary belts 1500–2000 m apart (Guliyev, 2026).

Currently, the scattered distribution of forest belts in the Sheki-Zagatala economic region contributes to wind and water erosion and the loss of fertile topsoil. The absence of protective belts around ravines, gullies, and valleys accelerates erosion and the expansion of ravine-gully systems. Likewise, the lack of belts along roads and infrastructure increases the risk of precipitate structural failure.

Therefore, establishing protective forest belts in ravine- and valley-adjacent areas, as well as along roads and infrastructure, is necessary and valid.

Settlement area share in the total land area

Settlement areas include land plots occupied by residential buildings, public facilities and structures, utility and industrial facilities, streets, squares, parks, gardens, and other land designated for general use. The recommended relative share of land under settlement areas was 1%–3% of the total area (Ryumin, 1990). According to cadastral data, this indicator in Balakan District was 1.26%, while in Zagatala, Gakh, Sheki, Oghuz, and Gabala districts, the said values were 1.11%, 0.86%, 1.13%, 2.86%, and 0.86%, respectively. However, the average settlement area for the Sheki-Zagatala economic region was 1.26%, compared with the nationwide (3.9%). This may refer to the relatively limited area for available land resources in Azerbaijan. In the country, the population density is 118 people per 1 km² (Statistical Yearbook, 2026).

By allocating land for new constructions within the context of intensifying settlement boundaries, careful spatial planning is necessary. Land in both existing and new settlements requires allocation in compacted blocks without fragmentation. Settlement planning projects must ensure environmental protection and efficient use of land resources.

The total share of settlement areas in Azerbaijan is 3.9%, with these being mainly formed through legally allocated land parcels. However, cases of illegal land occupation for the construction of individual residential houses are also widespread in the country. As a result, large-scale withdrawal of arable lands and peri-urban grazing areas from agricultural circulation persists, which, in turn, constrains the agrarian production potential of the region.

Electronic cadastral records revealed an illegitimate construction occurs extensively along high-voltage power lines, highways and railways, oil and gas pipeline protection zones, Caspian Sea and riverbanks, around active and deserted oil wells, and other specially designated lands. In the Sheki-Zagatala region, the recording of unauthorized constructions on arable lands has emerged in four administrative districts, totaling 3.728 cases, which correspond to approximately 60 hectares of land removed from agricultural use. Of these lands, 52% are municipally owned, 40.7% are private, and 7.3% are state-owned (Guliyev and Guliyev, 2021). During settlement planning, both international and local architectural practices should be in consideration, with national architectural and urban planning traditions also preserved. Projects currently being implemented in the recently liberated Karabakh Region became advanced examples in this regard.

Natural landscapes' share in the total area

Natural landscapes include natural pastures, summer and winter grazing lands, peri-urban pastures, forests, shrublands, wetlands, reed beds, rivers, lakes, ravines, gullies, and mountainous areas that contribute to the land fund of administrative units. However, the relative share of natural landscapes should not be less than 35%–40% in the total area (Reimers and Shtilmark, 1978). Research findings detailed the following district-level indicators: Balakan (66.85%), Zagatala (67.71%), Gakh (76.82%), Sheki (60.55%), Oghuz (73.29%), Gabala (72.81%), and the average for the Sheki-Zagatala economic region was 68.76%.

A high relative share of natural landscapes may limit the development of the regional economy, including crop production. However, this indicator does not provide assurance about the absence of ecological problems. Low productivity, reduced precipitation, deforestation, desertification, wind and water erosion, and river pollution are ecological issues associated with natural landscapes that require critical attention. The study of the ecological diversity and resilience of the research areas necessitates determining the ecological stability coefficient of the study area and the anthropogenic load (coefficient) of the territory (Rybarski and Gaysse, 1988; Volkov, 1998; Guliyev, 2022a and 2022b).

Ecological stability coefficient

The ecological stability coefficient in Azerbaijan is 0.47, indicating that most of the national territory was ecologically unstable (Guliyev, 2022a and 2022b). The Sheki-Zagatala economic region (K = 0.59) corresponds to moderately stable areas. District-level values were Balakan: 0.71; Zagatala: 0.65; Gakh: 0.64; Sheki: 0.47; Oghuz: 0.64; and Gabala: 0.57. The results revealed Sheki is ecologically unstable, while the districts Zagatala, Qakh, Oghuz, and Gabala emerged as moderately stable zones.

Assessment of anthropogenic load

The anthropogenic load coefficient primarily reflects the degree of human impact on the environment. In assessing the state of anthropogenic pressure within the territory of the Sheki-Zagatala economic region, land areas underwent grouping according to their level of anthropogenic load.

Group 1 comprised the lands occupied by industrial facilities and residential buildings, as well as areas allocated to roads and cemeteries. For this category, the level of anthropogenic pressure, upon assessment, was very high, with a corresponding score of 5.

Group 2 included arable lands, fallow lands, and perennial plantations. These areas were characteristic of the highest degree of anthropogenic pressure, with an assigned score of 4.

Group 3 consisted of summer pastures, winter pastures, peri-urban grazing areas, and hayfields. In this group, the anthropogenic pressure was considerably moderate, with a score of 3.

Group 4 encompassed forests, shrublands, water-covered lands, wetlands, and reed beds. The level of anthropogenic pressure here was deemed low, corresponding to a score of 2.

Group 5 referred to unused and uncultivated lands. Anthropogenic pressure in this group occurred as very low, with a score of 1.

Across Azerbaijan, the anthropogenic pressure was 2.91, Sheki-Zagatala (2.87), Balakan (2.79), Zagatala (2.88), Qakh (2.86), Sheki (3.04), Oghuz (2.82), and Gabala (2.69). On a five-point scale, these values revealed the moderate level of anthropogenic influence.

Assessment of the region's ecological landscape conditions suggested that land-use restrictions are necessary to maintain ecological balance, alongside comprehensive measures to protect soils from erosion and anthropogenic impacts. Natural landscapes, including hayfields, pastures, lakes, and forests, require special protection. Priority should proceed to establishing forest strips along gullies, ravines, rivers, roads, and reservoirs.

On improving ecological conditions, areas with relatively low ecological stability, rather than those with high ecological stability, should receive allocation for the development of industrial, transport, and residential zones. In previous years, thousands of hectares of winter pastures and peri-urban grazing lands have undergone conversion for arable and other designated uses (Table 4). In areas characterized by high, significant, and moderate levels of anthropogenic impact, it is essential to establish non-productive facilities, such as tourism infrastructure and recreational camps for children. Simultaneously, ecological and administrative measures, including the implementation of protection regimes and the systematic introduction of restrictions and prohibitions, should have consistent enforcement in these areas.

CONCLUSIONS

The study showed geographic and ecological-landscape factors play a crucial role in the sustainable use of soil and landscape resources in Azerbaijan. In the Sheki-Zagatala economic region, the analysis revealed proper assessment of geographic space and ecological-landscape potential directly affects the optimal utilization of resources. Planned management of soil resources increases productivity and ensures environmental protection. This approach gained recommendation for the efficient use of resources and the maintenance of ecological

Table 4. Level of anthropogenic pressure in the study area.

vS/S	Soil groups	Degree of anthropogenic load	Spatial units, the areas of soil groups, and Si x Bi indices												For the economic region	
			Balakan		Zagatala		Gakh		Sheki		Oghuz		Gabala			
			Area (thousand ha - Si)	Si x Bi	Area (thousand ha - Si)	Si x Bi	Area (thousand ha -- Si)	Si x Bi	Area (thousand ha - Si)	Si x Bi	Area (thousand ha - Si)	Si x Bi	Area (thousand ha - Si)	Si x Bi	Area (thousand ha - Si)	Si x Bi
1	Group 1	Very high (5)	2.9	14.5	3.7	18.5	2.8	14.0	4.7	23.5	4.1	20.5	2.4	12.0	20.6	103.0
2	Group 2	High (4)	27.8	111.2	39.7	158.8	31.8	127.2	91.2	364.8	24.7	98.8	39.7	158.8	254.9	1019.6
3	Group 3	Medium (3)	11.8	35.4	31.6	94.8	62.4	187.2	76.1	228.3	29.1	87.3	40.1	120.3	251.1	753.3
4	Group 4	Low (2)	47.0	94.0	55.6	111.2	47.0	93.9	51.1	102.2	47.9	95.8	53.2	106.4	301.8	603.5
5	Group 5	Very low (1)	2.9	2.9	3.9	3.9	5.4	5.4	20.2	20.2	1.9	1.9	19.5	19.5	53.8	53.8
Total			92.4	258.0	134.5	387.2	149.4	27.7	243.2	739.0	107.7	04.3	154.9	417.0	882.1	2533.2
Degree of anthropogenic load by area (K)			2.79		2.88		2.86		3.04		2.82		2.69		2.87	

balance in the future. The improvement of the current situation requires considering it necessary to consolidate land plots, optimize the structure in accordance with agroecological requirements, expand protective measures, and implement approaches based on the landscape planning. The obtained results were consistent with past studies and expressed that the assessment of geographical space and ecological-landscape potential is effective both environmentally and economically. It plays a significant role in increasing agricultural productivity, protecting natural resources, and ensuring sustainable development.

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