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И ГЕОГРАФИЧЕСКИЕ НАУКИ

ЖЕР ТУРАЛЫ ЖӘНЕ ГЕОГРАФИЯЛЫҚ ҒЫЛЫМДАР
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RECREATIONAL POTENTIAL OF THE TERRITORIAL AND NATURAL SYSTEM OF THE KAZAKH ALTAI

ҚАЗАҚ АЛТАЙЫНЫҢ АУМАҚТЫҚ-ТАБИҒИ ЖҮЙЕСІНІҢ РЕКРЕАЦИЯЛЫҚ ӘЛЕУЕТІ

РЕКРЕАЦИОННЫЙ ПОТЕНЦИАЛ ТЕРРИТОРИАЛЬНО-ПРИРОДНОЙ СИСТЕМЫ КАЗАХСКОГО АЛТАЯ

Abstract. *Mountains not only occupy a significant part of the land, but are also the main haven of eco-tourism. According to the World Environmental Monitoring Center, the land area occupied by mountains is 35.9 million km2, or 24.3 % of the Earth's total surface. The Southern Altai is a ridge, the western part of which is located in Kazakhstan, the eastern part of the ridge separates Russia from China. The total length of the ridge is about 125 km. Steppes are common up to a height of 1400-1500 m, park larch forests reach a height of 2100-2200 m; subalpine and alpine meadows are common in the alpine belt. There are over 180 glaciers. It begins to the west from the Kara Koba River, which separates it from the Kalbinsky Ridge located further west. It runs from west to east. In the east, it ends at the Tavan-Bogdo-Ula massif, which begins the Saylugem ranges (to the east) and the Mongolian Altai (to the south). In the southeast, the Bendyrtau Mountains adjoin the ridge.*

Keywords: *Southern Altai, ecosystem, natural, tourism, recreation, geo-sites, management.*

Аннотация. *Таулы аймақтарға жердің кейбір негізгі экожүйелері кіреді. Олар сонымен қатар ең маңызды минералды, табиғи, ауылшаруашылық және туристік-рекреациялық ресурстарды қамтиды. Кешенді өңірлік географиялық бағалау Нақты таулы жерде туризмнің перспективалық дамуын бағалау үшін қажетті шарт болып табылады. Шығыс қазақстан әкімшілік округінің құрамына кіретін Оңтүстік Алтайдың тау жүйесі бүкіл әлемде өзінің бірегей табиғи және мәдени мұрасымен, аумақтың барлық географиялық және геоморфологиялық аймақтарында таралуымен танымал. Оның сөзсіз туристік және рекреациялық тартымдылығы бірегей табиғи – геоморфологиялық және биологиялық сипаттамаларды, соның ішінде орографиялық, гидрологиялық, Климаттық, минералды және топырақ ерекшеліктерін, сондай-ақ эндемикалық өсімдіктер мен жабайы табиғатты көрсетеді. Айтарлықтай биотикалық және географиялық әлеует-*

ке қарамастан, бұл ауданда өмірлік маңызды және тұрақты туризмнің дамуына жеткіліксіз, негізінен топырақты жол желісі, жергілікті орналастыру құралдарының жеткіліксіз саны, сондай-ақ шекаралық аймаққа кірудің ерекше ережелері кедергі келтіреді.

Түйін сөздер: *Оңтүстік Алтай, тау экожүйелері, табиғи әлеует, туризм және рекреация, гео алаңдар, табиғат пайдалану.*

Аннотация. *Горные регионы включают в себя некоторые из основных экосистем Земли. Они также включают в себя наиболее значительные минеральные, природные, сельскохозяйственные и туристско-рекреационные ресурсы. Комплексная региональная географическая оценка является необходимым условием для оценки перспективного развития туризма в конкретной горной местности. Горная система Южного Алтая, входящая в состав Восточно-Казахстанского административного округа, известна во всем мире своим уникальным природным и культурным наследием, распространенным во всех географических и геоморфологических зонах территории. Ее несомненная туристско-рекреационная привлекательность отражает уникальные природные – как геоморфологические, так и биологические – характеристики, в том числе орографические, гидрологические, климатические, минеральные и почвенные особенности, а также эндемичные растения и дикая природа, соответственно, дополняются многими доисторическими археологическими памятниками. Несмотря на значительный биотический и географический потенциал, развитию жизненно важного и устойчивого туризма в этом районе препятствует недостаточная, в основном грунтовая дорожная сеть, недостаточное количество местных средств размещения, а также особые правила въезда в пограничную зону.*

Ключевые слова: *Южный Алтай, горные экосистемы, природный потенциал, туризм и рекреация, геоплощадки, природопользование.*

Introduction. Tourism in the modern world is considered as a socio-economic phenomenon that directly and indirectly affects the development of all related infrastructure. Modern tourism is based on a high level of development of transport, the social sphere and the service sector, which ultimately makes it a highly profitable branch of the economy.

According to the World Tourism Organization (WTO), today tourism is one of the most successful and dynamic sectors of the world economy. In terms of profitability, it only allows for the extraction and refining of oil. Tourism accounts for about 6 % of the world's gross national product, 7 % of global investment, every 16 jobs, 11% of global consumer spending and 5% of all tax revenues. In this regard, in many countries, the tourism sector is actively developing with the support of the state [1].

The main purpose of the study is to analyze the prospects for the development of tourism in the world.

Almost all Altai ridges originate at the junction of great mountains and are famous for being part of the world watershed between the inland basin of Central Asia and the waters of the Arctic Ocean. The highest and most beautiful double-headed peak in Altai-Beluka (Muztau), located on the border between Kazakhstan and Russia.

The mountainous country, called Altai, is located at 48° and 53°S. Between, its southwestern part is located in our republic and is called Kazakhstan Altai.

The Kazakh part of Altai occupies almost one-tenth of the territory of the entire Republic. This is a very beautiful area with amazing natural contrasts, including almost all landscape-zone conditions: from the desolate rocky surrounding mountains facing the Zaisan depression to the rocky ridges covered with eternal snow and snow fields, usually hidden under the clouds hovering.

The western part of Kazakhstan's Altai, or Ore Altai, is a world-famous treasure trove of ore fossils. It is not accidental that the area is called Altai, which means Golden Mountain in translation. The names of many travelers and natural scientists who have studied this region since the eighteenth century are related to the Kazakh part of Altai: P.S. Pallas, P. Shangin and F.A. Gebler, K.F. Ledebur, G.E. Shchurovsky, G.N. Potanin, M.V. Pevtsov, V.V. Sapozhnikov, N.F.

Kashchenko, N.M. Przhevalsky. The famous German zoologist Alfred Bram is the author of the multi-volume publication «Animal Life», and his companion Otto Finsch visited here in the last century. During the Soviet period, Altai in Kazakhstan was made up of outstanding pastoralists P.P. Sushkin explored. The mountain range of Altai, Kazakhstan, has a complex geological structure: in its western peripheral part, the slightly hilly plains are clearly distinguished, and it enters the intermediate mountain range to the east. The mountainous part has wide valleys and narrow deep in the west, the Lower Paleozoic, Carboniferous, rich ancient volcanic structures and complex geological tectonic structures are related to many stages of crustal movement and volcanic activity. A group of sharp rocky ridges, ridges, and peaks, which are the center of modern glaciers, rise in some places above the alpine plain Altai [2]. The history of the formation of the Altai Mountains itself is complex and peculiar. According to geologists, the Altai Mountains appeared more than 200 million years ago. Many years ago, when a strong volcanic process occurred here, it was accompanied by the influx and intrusion of molten magma into the formation of sedimentary rocks. As the magma cools, the crystalline rock formed by the magma, hydrothermal activity (the pressure of the hot jet of water and gas) brings various polymetallic ores to the surface. Millions of years of continuous precipitation and wind completely destroyed the Altai uplift. Subsequently, a powerful underground force, the fanatical continent, was on the verge of «rejuvenation» again-the mountain relief has been restored. They raised its various parts to different heights. This is an approximate scheme for the formation of part of the mountain landscape of Altai Kazakhstan-this explains the origin of the richest warehouses of polymetallic ores, which are naturally placed along the so-called ore belt [3].

Aims and background (methods and approaches). The climate of Altai is a continental climate, with large daily, seasonal and average annual fluctuations in temperature, which is explained by the inland location of the mountainous territory. Altai is the meeting point of the continental climate of Mongolia, the Central Asian steppe and semi-desert climate, and the continental climate of Western Siberia. The vertical zonality of the mountainous part is relatively clear, which in turn leads to a complex mosaic of plant belt distribution [4].

The coldest months are January and February. The average monthly temperature in the northern Rudny Altai Mountains and high-altitude basins is – 17 °C to – 23.8 °C, and the average monthly temperature in the southern mountains is – 14.1 °C to – 16.6 °C. The warmest month is July, with an average monthly temperature of +14 °C. +16 °C, at an altitude of 1000-1500 m above sea level-about °C, the temperature is slightly higher in the foothills and flat parts. Wind activity is difficult to show: in winter, the Mongolian-Siberian anticyclone has low temperatures and low precipitation. In summer, the collapse of the Mongolian-Siberian anticyclone contributes to the movement of humid air masses in the west, when humid western and northwestern winds prevail. The distribution of precipitation is extremely uneven, mainly determined by the location of the mountain ranges that can delay precipitation from the west. Precipitation depends on the absolute height and the level of slope exposure-as it approaches high altitudes, it increases to 1000-1300 mm or more per year. The largest amount of precipitation falls on the windward slopes of the Rudny Altai Ridge, because they are the first slopes to intercept the moisture of the western airflow. On the Ivanovo Ridge, the Gromotukha River originates here. White and black Uba, Turgusun, the maximum precipitation value is 2200 mm (under the specification of 1500-1800mm). In Southern Altai Province, the second maximum is limited to the northern slopes of the Narym and Torbagatai mountains-where the precipitation exceeds 1300 mm. In winter, on the leeward slopes of its sloping part, the height of snow usually reaches 3-4 meters. The significant mass of snow is concentrated in the axial part of the highest ridge, which is located in numerous punches, circuses, and avalanches. Even after the seasonal snow cover disappears, the snowfield still exists,

and the peaks of the ridges are decorated throughout the summer. In the age of snowfall and melting, they are compressed to form small glaciers and cornices [5]. Drawing up a synthetic map of the tourist and recreational potential of the region. For him B.C. The methodology proposed by tikunov (1997) was used [61]. B.C. According to tikunov (1997), a synthetic map is a set of natural objects on the map as a whole as a result of the combination of several indicators. Several indicators of our research refer to the natural and recreational potential of natural monuments (Geological, hydrological, archaeological and other monuments).

For the synthesis of various indicators, integral characteristics are calculated, which means an assessment of the prospects of the studied region and key regions based on the indicators evaluated for the purpose of Tourism Development in the region. The basis of samples aimed at creating synthetic assessment maps should be arranged in a hierarchical order, and the assessment is carried out in the context of territorial unity of the recreational areas that make up taxa. This algorithm allows us to obtain synthetic characteristics of the evaluation criteria of territorial units of a single magnitude and evaluate these territorial units based on these estimates [6].

Experimental. The final stage of the studied work was the construction of grid isosomes – drawing up a surface map of the natural and recreational areas of Katon-Karagay, Kurchum, and Markakol. As a result of this study, interesting and unique natural objects of Southern Altai for the development of Tourism and Recreation, protected areas were identified (fig. 5).

As a result of field studies of the southern Altai natural and recreational areas, several natural objects have been identified that will increase the tourist potential of the region in the period from 2015 to 2018. Most of them are forms that are not recorded in mass media (table 1).

Table 1. Tourist and recreational evaluation with Southern Altai

Region	Terrain, soil	Climate	Water bodies	Vegetation	Total points
Katon-Karagay	5	3	7	8	20
Kurchum	4	6	8	2	45

Results of the study and analysis of the obtained evaluation works. The total number of operational territorial units of the natural and recreational areas of the southern Altai is covered by 80 cells. In order to identify various natural monuments in the region, the entire cell has its own characteristics. In particular, we showed unique natural objects in natural and recreational areas [7].

Among the natural and recreational areas on the territory of the southern Altai, which differ in the number of natural monuments (Geological, hydrological and other monuments), protected areas-the territory of the Katon – Karagay natural National Park, the territory of the Markakol nature reserve, in the south-west of the Kurchum district there are many natural monuments (geological monuments (Kiin-Kerish, Kyzyl-Kerish No. 1,2).

Chapter one conclusion on the consideration of the theoretical methodological foundations of the study of natural recreational resources [8]. The main purpose of the chapter was to analyze the theoretical and methodological foundations of assessing the natural and recreational potential, the main concepts and concepts. As a result, the methodology for assessing the natural and recreational resources of the studied region was summarized, and data related to the Southern Altai were analyzed and mapped, improving the assessment methodology for four main indicators. The information obtained is supplemented by a table. These are assessment of natural systems by climatic indicators, drawing up a scale of recreational assessment of the terrain, grouping of natural systems by geomorphological indicators and determining the degree of comfort of water bodies of the Southern Altai. As a result of Integral maps compiled as a result of quantitative assessment using GIS, the development of the tourist and recreational industry of the stud-

ied territory has great prospects. Active (water tourism, rafting, fishing, etc.) and inactive (water recreation) types of tourism can be developed on the territory [9].

The practical value of the work is that on the basis of this methodology, for the first time, an electronic map of natural monuments of the territory under study was developed and an attempt was made to comprehensively assess the cultural and historical potential of the territory.

In the southern Altai, 6 territorial and recreational systems were zoned: Kara Berel, Markakol, Katon-Karagay, narym, Kurchum, zhaysan [10].

Katon-Karagay territorial and recreational system is a place where the borders of Kazakhstan, Russia, China, Mongolia intersect, the slopes of Muztau, covered with permafrost, are full of high peaks, giant Cedars, rivers and lakes, and beautiful meadows with rare flowers. Orographic ridges: Narym, South Altai (3871 m), Sarymsakty (3373 m), Tarbagatai (2995 m). The terrain of these ridges is attributed to high mountains. Glaciers are found on the ridges. There are inter-mountain pits with a depth of up to 400-1500 m: Katon-Karagay, Chingistai-Katon and others [11].

The climate is characterized by a variety corresponding to the mountainous climate. Katon-karagai ARZ is located in an alpine zone with a mountainous and continental climate, characterized by severe long-term Winters, hot and slow summers and autumn. The territory of the district is clearly divided into four climatic zones: high-altitude zone (tundra-Meadow); Mountain – Forest, excessively humid; mountain, humid forest-steppe; mountain-steppe.

The weather of the high-altitude and mountain-forest zone of the Kara Berel-Bukhtarma territorial and recreational system is very humid, brownish-cold, and sometimes very cold. In the northern half of the territory, 550-560 mm of moisture falls annually. The heat of July moisture is especially clearly felt. The average monthly wind speed for the year is 1.7 m/sec. The number of days with strong winds is 7 days a year, and dust storms – 10 days [12].

The annual precipitation is 432 mm. In the high mountains, the average temperature in January is – 17 – 19 °C, but the wind is particularly important, which causes severe weather conditions. In winter, the average wind speed is 6-8 M/s. the repetition of favorable weather conditions for the human body is 20-25 days, relatively favorable 70-75 days. Indicators of favorable bioclimatic conditions in high-altitude winter conditions (KKM) are 0.15-0.20. in inter-mountain pits, the nature of the winter season depends on the local climate-forming conditions [13].

In summer, the steep slope of the climate is clearly visible. In the mountains with an altitude of 2500 m, the average temperature in July is 8-9 °C. at altitudes of 3000 m, in the summer period from June to August, the average favorable weather does not exceed 10 days, relatively favorable - 17-20 days, GKDK 0.09-0.10.

The hydrographic network of the territorial and recreational system consists of countless lakes, rivers, and streams. The Bukhtarma River, which flows along the northern border of the district, is the largest watercourse. The Narym River, which crosses from East to West, is the second largest watercourse. Many streams take their heads off the mountain and flow at a high speed of 1-2 m/sec. The water quality is good, suitable for use in everyday life and agriculture.

The landscape is arranged according to the vertical belt pattern. Katon-Karagay district is divided into four high-altitude zones:

– Nival zone, subnival belt entry zone;

– tundra-Meadow zone: mountain-tundra, mountain-meadow-Alpine, mountain-meadow-subalpine;

– mountain-forest zone: subalpine mountain-forest and mountain-meadow-Taiga;

– mountain-forest-meadow-steppe zone [14].

The high-altitude Nival zone is characterized by glacial valleys. Below 2800 m lies a subnival zone, in the rocks of this place there are Siberian barberry, black currant, flat-leaved Badan, etc.

The mountain tundra zone lies below the absolute height of 2100 m. The tundra stands out according to its landscape. The tundra in this zone is rocky, mossy-lichen, shrubby, grassy.

The mountain-forest zone is distributed throughout the province. The subalpine mountain-forest and mountain-meadow Taiga zone occupies the upper part of the zone. Spruce and larch are distributed in the zone. In the Lower Zone there are white birch, blue Poplar, Poplar. The main value is that rare or listed species in the Red Book need special protection. These include: Altai radish, Siberian kandyk, Tulip of various leaves, pink radola, Altai Wolf Berry [15].

The largest tourist sites: Rakhman, Yazevoye, Bukhtarma, Maraldy, Chernovoye lakes, Kokkol, Rakhman, Arasan, Yazevoye waterfalls, Berel mound, old Austrian road, Muztau are the wealth of all Kazakhstan. On July 17, 2001, the largest Katon-Karagay National Natural Park in the Republic was established. The water of the Rahman spring is used in the treatment of stomach, rheumatism, gynecological, nervous, respiratory diseases and various poisoning and ulcers [16].

Kurchum (Markakol) territorial and recreational system. The main attraction of the territory is Lake Markakol. The lake is located between the azutau and Kurchum ranges, at an altitude of 1449.3 m above sea level. The transparency of the water and the appearance of the high mountains and picturesque fir trees surrounding the Lake give a wonderful view of nature. To the north of the lake is the High-Altitude Sarymsakty Ridge, with a maximum height of 3373 m. on the northern coast is the Kurchum Ridge (2645 m), on the southern coast is the Azutau Ridge with an absolute height of 1800-2300 m.

The lake is located in a tectonic pit. The length of the lake is 38 km, width – 19 km and depth – 27 m. about 100 small rivers and streams flow into the lake, but only one Kalzhyr river originates from it. The largest rivers that flow into the lake are Karabulak, Matabai, Zhirenbaytal, etc.the southern side of the Bank is steeply Rocky, and the tributaries of small rivers are swampy. From October to May, the lake freezes. The water is fresh, transparent, with a mineralization of 0.07 g/l, contains: iodine, fluorine, bromine, etc [17].

The climate was governed by the law of the vertical belt. In summer, favorable weather conditions (Class III), cooling and cold weather of Class IV and V are repeated many times on the ridge. The winter weather is harsh (Class X). On the northern slope, the average height of the snow cover is 30-50 cm.

Conclusions. Analyzing the hydro resources of the southern Altai for recreational purposes, we can draw the following conclusions::

1) the water area of Southern Altai is favorable for the development of active types of Tourism;

2) the rivers and lakes of the Southern Altai are of interest to vacationers for sports fishing, especially the Black Irtysh (white perch, perch, walleye, carp, carp, Pike), Markakol (harus), Kalzhyr (perch);

3) due to the variety of natural conditions and the presence of interesting sights, it is advisable to organize hiking routes, in particular, to Lake Markakol, the northern and north-eastern zone of Katon-Karagay district (Kokkol, Yazovoe, Arasan, Rahman waterfalls), the Kurchum, Kara-Kaba, Bukhtarma rivers;

4) the lakes in the studied region are partly unsuitable for diving in summer due to the mountainous terrain, only the water temperature of Lake Markakol is favorable [18].

5) conditionally providing tourism to the water bodies of the Southern Altai is quite favorable and relatively favorable.

6) as therapeutic mud necessary for Sanatorium treatment, it is allowed to use the territory of the mud swamp. The swamp of this place was a cure for joint tumors, skin diseases, sprains of limbs, and other diseases. It is one of the most important works of field practical research, pass-

ing laboratory analysis on the health-improving effect of marshes on the human body [19].

The conducted comprehensive research is useful for the development of Tourism and recreation in the Southern Altai in the future, for the organization of multidisciplinary tourism and recreation of high-altitude glaciers and passes of various degrees of complexity in the Uzen-lake basin. The most well-studied areas of the Southern Altai, grouped by the degree of convenience of water bodies, were identified. Determining the degree of convenience of water bodies for tourism will determine the recreational specialization in the natural and recreational areas of Southern Altai and provide great opportunities for the development of appropriate social infrastructure.

References

1. Brilha, J., (2016). Inventory and quantitative assessment of geosites and geodiversity sites: a review, Geoheritage 8(2), pp. 119-134.
2. Chlachula J., (2010). Pleistocene climate change, natural environments and Palaeolithic peopling of East Kazakhstan, in:Eurasian Perspectives of Environmental Archaeology (J.Chlachula and N.Catto, Editors), Quaternary International220**,** pp.64-87.
3. Chlachula, J., (2011). Biodiversity and environmental protection of Southern Altai. Studii sicomunicari, Stiintelenaturii, vol. 27/1, pp 171-178.
4. Chlachula, J., (2017a). Geo-environmental context of the Scythian occupation of the Altai.Special Volume «Landscape and People». Quaternary International (submission).
5. Chlachula, J., (2017b). Geomorphology and Geo-Heritage of East Kazakhstan. Abstract Volume, 9th Conference on Geomorphology “Geomorphology and Society”. Vigyan Bhawan, New Delhi, 6-11 November 2017, Section S: Geomorphosites and Geotourism, Abstract no. 790, pp. 282.
6. Deviatkin, E.V., (1965), Cainozoic Deposits and Neotectonics of the South-Eastern Altai, Proceedings GIN AN SSSR, vol. 126, pp. 244.
7. Dunets, A., N., (2011), Tourist and Recreational Complexes of Mountain Region, Monograph, ASU Publishing House, Barnaul, pp. 150. Boyle, S., (2015), Effects of Nonconsumptive Recreation on Wildlife, in: Wildlife Society Bulletin, no. 2, vol. 13, pp. 110-116.
8. Geta, R., I., Yegorina, A., V., Saparov, K.T., Zhensikbaeva, N., Z., (2015), Methods for Assessing the Recreational Potential of the Kazakhstan Part of Altai on the Basis of Information Theory, in: Academy of Natural Sciences. International Journal of Experimental Education, Moscow, pp. 10-14.
9. Harms, E., Sukhova, M., Kocheeva, N., (2016), On the concept of sustainable recreational use of natural resources of cross- border areas of Al-tai, in: Journal of Environmental Management and Tourism. Issue 2 (14), vol. 7, pp. 158-164.
10. Krasnoyarova, B., Kharlamova, N., Sharabarina, S., Plutalova, T., Garms., E, (2015), Strategic development of agrarian sphere and recreation in the Altai regions, Russia, under re-gional climate change, in: Russian Journal of Agricultural and Socio-Economic Sciences. Scientific Journal. Barnaul, pp. 3-15.
11. Mason, P. (2015). Tourism Impacts, Planning and Management.Routledgte, Oxon, UK. 253 p.
12. Mazbaev, O., B., (2016), Geographical Bases of Territorial Development of Tourism in Republic of Kazakhstan, in: Ph. D. Thesis, Al-Farabi Kazakh National University, Almaty, pp. 38.
13. Saparov, K.,T., Zhensikbayeva, N., Z., (2016), Evaluation of the Natural Resource Potential of the Southern Altai, in: Vestnik, D. Serikbayev East Kazakhstan State Technical University, Scientific Journal. Ust-Kamenogorsk, pp. 66-71.
14. Swarbrooke, J., Beard, C., Leckie, S., Pomfret, G. (2003), Adventure Tourism, the New Frontier, in: Oxford, Butterworth-Heineman, pp. 354.
15. Yegorina, A.,Saparov, K., T., Zhensikbayeva, N., Z., (2016), The Structure of the Geo-Cultural Space of Southern Altai as a Factor of Tourist-Recreational Development, in: Vestnik, KNU, Scientific Journal. Almaty, pp. 214-219.
16. Zhakupov, A., Saparov, K., T., Mazbaev, O., B., Dzhanaleeva, G., M., Musabaeva, M., N., Eginbaeva, A.,Atasoy, E., (2015), Fundamentals of recreation-geographic assessment for tourism development, in: Oxidation Communications, 38(3), pp. 1539-1544.
17. Zhakupov, A., Atasoy, E., Musabayeva, M., Djanalieva, G., (2014), The natural recourse potential of Pavlodar Oblast for the organization of leisure and tourism, in: European Geographical, Year II,

no. 4, vol. 4, pp. 170-176.
18. Zhensikbayeva, N., Saparov, K.., Atasoy.,E., Kulzhanova,S., Wendt, J., (2017), Determination of Southern Altai geography propitiousness extent for tourism development, in: GeoJournal of Tourism and Geosites, Year XI, no. 2,vol. 20, pp. 158-164.
19. Jiri Chlachula, Yegorina A., Kabdrakhmanova N, Zhensikbayeva, N. (2021), Territorial Assessment of the East Kazakhstan Geo/Ecotourism: Sustainable Travel Prospects in the Southern Altai Area, in: Geosciences, vol. 11, 156, pp. 1-17.