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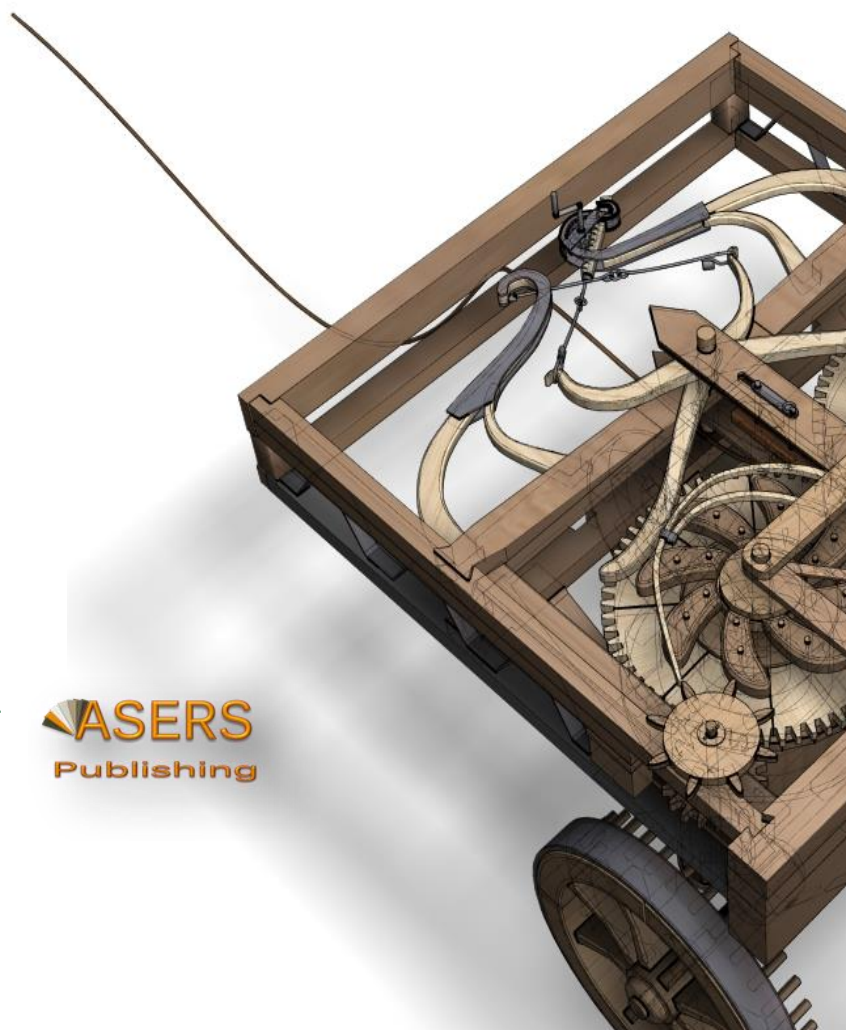
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Journal of Environmental Management and Tourism is an interdisciplinary research journal, aimed to publish articles and original research papers that should contribute to the development of both experimental and theoretical nature in the field of Environmental Management and Tourism Sciences.

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Ecotourism Routes in Ugam-Chatkal State Natural Park and Their Organization

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Abstract

Tourism is one of the most important sectors of the world economy and one of the fastest growing. The tourism industry plays an important role in the economies of many countries.

An analysis of world practice shows that the main features of ecotourism are: an orientation towards organizing a full-fledged recreation in the wild and slightly altered nature, which contributes to the restoration of the physical and spiritual strength of the tourist, expanding his horizons of natural sciences, as well as compliance with ethical standards in the natural and cultural-historical environment. The article was written in connection with the plan of scientific research carried out in order to achieve compliance with the processes of nature management, indicated in the main priorities aimed at ensuring the country's environmental safety.

Keywords: ecological tourism; national park; mountains; mineral waters.

JEL Classification: Q01; Q26; Z32.

Introduction

The 2017 World Tourism Organization report outlines 10 sustainable tourism development programs that emphasize that "ecotourism must focus on climate change, waste management, sustainable land use, biodiversity and conservation". Therefore, the development of ecotourism requires the preservation of ecosystems, the organization of biodiversity and conservation of natural monuments on a scientific basis, the development of strategies for the sustainable development of ecotourism (<https://www.unwto.org/ru>).

The WTO has identified trends in the development of ecotourism, according to which, by the beginning of 2020, ecotourism should be included in the five main strategic directions. In late 2019 - early 2020, the tourism sector experienced a sharp decline for some time due to the global COVID-19 pandemic.

In world practice, in the development of ecotourism, priority is given to natural monuments, specially protected areas, the protection of ecosystems, and the rational use of natural resources.

Protected areas play a unique nuclear role in the preservation of unique natural complexes, as well as in the implementation of restoration of damage caused to nature under the influence of anthropogenic activities, along with the role of an ecological framework. In addition, protected areas are a resource for the development of ecological tourism.

The uniqueness of the natural landscapes of Uzbekistan, the presence of specially protected natural areas testifies to the great potential for the development of ecotourism. Recreation and rehabilitation of people is the basis of economic and social tasks, it is especially important to study the recreational and tourism potential of the region, identifies and find new objects for recreation, develop recommendations for their assessment and optimization.

Ecotourism, unlike other types of tourism, has a great impact on the sustainable development of natural areas. In specially protected natural areas, it is aimed at preserving the local socio-cultural environment, paying special attention to environmental education, without harming the environment and ensuring the sustainable development of territories.

1. Literature Review

When organizing and conducting ecotourism routes, Volkov V.S. and Shapakina K.E. (1985) prefer to divide them into one rectilinear, radial, circular types, depending on the possibilities of tourists. Tukhliiev N. and Abdullaeva T. (2006) knows that any tourist routes are tourist excursions or travel routes, predetermined in a certain order by geographical points.

However, not all ecotourism objects are considered geographic points, *i.e.* they do not have the coordinates of their geographic location.

Erdavletov S.R. (2000) considers it expedient to carry out tourist routes along the routes indicated in a predetermined schedule, map or diagrams. This cannot be denied as the efficiency of ecotourism routes with pre-established schedules and defined routes is high. The author recommends assessing the safety state of each ecotourism object at 4 levels (safe, dangerous, extremely dangerous, and tragic), identifying factors or forces affecting them (natural, natural-anthropogenic, anthropogenic) and developing the most optimal ways of conducting tourism.

Nigmatov A.N. (2019) considers it expedient to address safety issues in the planning and implementation of ecotourism routes, to develop an action plan that provides minimal risk in terms of safety of life of tourists. The author recommends assessing the safety status of each ecotourism site at 4 levels (safe, dangerous, extremely dangerous, and tragic), identifying factors or forces affecting them (natural, natural-anthropogenic, anthropogenic) and developing the most optimal ways to conduct tourism.

Yakubjanova Sh.T. (2018) considers that the development of tourist routes in most cases should be carried out in five stages:

- carrying out of reconnaissance works (research of tourist potential of the place or area, identification and classification of tourist objects;
- development of a route project and its mapping or mapping;
- creation of "notes", booklets and advertising projects for each route recipient, guide and tourists;
- appropriate examination of created projects;
- make relevant changes and additions to the projects and publish them.

The author divides agrotouristic routes into the following types according to their classification criteria: pure agrotouristic routes; agro-ecotourism routes; routes aimed at combining agrotourism with other types of tourism.

In the development of tourist routes, the principles recommended by Khaitboyev R. and Sattarov A. (2018) can be applied to ecotourism routes.

The development of tourism in the republic is one of the economic sectors of the national economy, capable of creating thousands of new jobs in the future, accelerating the development of regions, increasing the income and quality of life of the population, which in turn will lead to an improvement in the country's image and investment attractiveness (Melisovna 2021).

Eco tourism has great opportunities in the development of the leisure and travelling industry in the Republic of Uzbekistan. In this step, administrative parts of the government have already started paying great attention on the deployment of the sector (Aziza 2019).

For ecotourism routes to be understandable and popular, the concept (worldview) of the species must be fully covered, reflect the positive aspects of the trip, and determine the optimal features of service and convenience. It is advisable to do it for different purposes, as mentioned above, depending on the level of opportunity of people of different ages or social status. In many cases, ecotourism itineraries are combined with other types of tourist itineraries to make them more interesting, extensive and profitable.

2. Materials and Methods

One of the main factors that distinguish tourist attractions is their exotic nature, unique landscapes, diversity of flora and fauna and unique natural monuments. Protected natural areas are a key link in eco-tourism. Tourism in specially protected areas is a concept that is contradictory at first glance. However, many countries around the world are currently engaged in this type of activity in specially protected areas (reserves).

Ecotourism routes can be organized in several directions in specially protected areas. A brief description of the main directions is as follows:

1. Scientific ecological tourism - for scientific institutions and specialists (zoologists, entomologists, botanists, etc.). This is done on the basis of a pre-agreed contract.

2. General educational ecological excursions - conducted only at special sites. This route is for local visitors.

3. Children's ecological tours are a privileged category. The ecological camp, which is organized free of charge every year, is intended for children who help the reserve.

4. For people with high income or commercial excursions - the types that benefit the organization, that is, the service is unusually expensive by 20%. Offers that do not comply with the protection regime will not be considered.

5. Adventure eco-tours are a form of work with individual clients. Unlike commercial tours, itineraries to specific designated locations are based on the interests of the client (Shamuratova 2021).

In the process of conducting all ecotours, high results are achieved if the propaganda work in the protection of nature is carried out convincingly, purposefully, systematically in content and essence.

The zonal structure of the territory of the national park is suitable for the organization of complex ecological species. Such species are widespread in South Africa and Australia, which are leaders in ecological tourism. Part of the time allotted to such species is acquaintance with untouched nature, the rest is ethnographic, acquaintance with the way of life, traditional forms of economic activity, culture, customs, traditions, customs, traditional cuisine, local architecture, etc.

Based on this, we also want to offer eco-routes for organizing and developing ecological tourism in the Chatkal State Biosphere Reserve, located on the southwestern slope of the Chatkal ridge in the Parkent and Akhangaron districts of the Tashkent region. It is necessary to ensure the observance of the order of the reserve when organizing eco-routes. For this, the management of the reserve will need to develop "Rules for the stay of tourists and excursionists in the reserve."

In 1947, a mountain-forest reserve with an area of 22,000 hectares was created in the Boshkizylsay and Shovozsay hollows of the Chatkal ridge. Today the area of the reserve is 35.7 thousand hectares takes on him.

In the reserve, this is the largest research institution in Uzbekistan, experts carry out environmental, spiritual and educational work. The staff of the reserve takes an active part in various events with various reports and speeches, constantly promoting the idea of nature protection.

The Chatkal State Biosphere Reserve protects the mountain-forest landscape and the animals that live there. The main part of the reserve is located on Mount Kyzyl'nura, 70 km east of Tashkent. The snow leopard, the Menzbier squirrel and the sparrow, listed in the UNESCO Red Book, are protected here.

The highest point of the reserve is Kizilnur peak, 3265 m above sea level. There is snow on the southern slope that does not melt even in summer, but they appear in the form of long crevices without forming glaciers. Slightly lower are the peaks Kurgantash (2992 m), Takali (2763) and Khovli (2751).

The vegetation of the reserve is rich and varied. There are 600 species of grasses and 40 species of trees and shrubs, some of which are endemic to the basins of the Western Tien Shan and Chatkal, of which 4 species are found only in Boshkizylsay.

The fauna of the Chatkal Biosphere Reserve is also diverse and rich. It contains species from different zones of the animal kingdom.

When choosing any route, first of all, you need to consider its purpose. The purpose of these ecotourism routes is environmental education, the development of a culture of interaction with nature, behavior in the natural environment and adherence to ethical standards.

Ecotourism routes. **Route1.** Field scientific base - Mount Kukar - river Takhtakhodzhasoy - scientific field base. The length of the route is 10 km.

The route starts from the left bank of Boshkizylsay, crosses Koznakoksoy along a narrow mountain path and climbs steeply to the top of Mount Kukar. Tourists will get acquainted with the flora and fauna of the reserve.

On the way to tourists, you can find many special canteens for haymaking and feeding animals. Sometimes on the trails there are traces of pigs, badgers and other animals.

Route 2. Scientific-field base-Irrigation-scientific-field base between Govkhona-Boshkizylsay and Shovazsay. The length of the route is 25 km.

On the way, you can meet a rare representative of the fauna - a blue bird, as well as attract tourists from different fauna.

The route introduces tourists to two types of mountain plants. Low-mountain groves belong to the lower reaches of the valleys of the Bashkizylsay and Shovozsay rivers.

The main types of low-mountain tugai are Uzbek poplar and black willow.

Alpine groves are located in the upper reaches of the valleys. The basis of vegetation is the Tien Shan willow, which spreads along the banks of several rivers and streams.

In all the proposed routes, of course, it is necessary to acquaint tourists with the nature, flora and fauna of the reserve and to address issues such as their protection.

In many cases, they are combined with other types of tourist routes to make ecotourism routes interesting, varied and profitable. Their goal is to broaden horizons, expand geographical knowledge, study nature, cultural and historical heritage, lifestyle and traditions of the local population, as well as instill in people a sense of responsibility for nature and the fate of each of its elements.

For example, a two-day horseback riding tour along the Pskom Ridge of the travel agency "Elena-Tour" is organized in conjunction with ethnographic tourism.

First day. Transfer from Tashkent to the village of Burchmulla (120 km., 2 hours), acquaintance with the life and life of the local population. Relax and swim in the Charvak reservoir. Overnight in one of the houses in the village of Yakkatut (900 m above sea level).

Second day. Horse trekking to the upper reaches of the Chavod River. Ascent to the Kelinchak passes (2355 m). View from the top of the Charvak reservoir, surrounded by the western Tien Shan Mountains. Descent from the village of Nanai (880 m) to the valley of the Pskom River. Parking at the local house. In the evening, return to Tashkent via Sidzhak (120 km, 2 hours).

Hike - "On the sidewalks of Kulsoy": the first day. Arrival from Tashkent to the mountain village of Burchmulla (120 km, 2 hours). Accommodation in an apartment or tents. Rest on the shore of the Charvak reservoir.

Second day. Departure from the village along the route in the morning. Ascent to the Tiksoy pass (1560 m) with a slight descent (1 hour 30 minutes). Inspection of the peaks of the Charvak reservoir, Ovkashka, Bolshoy Chimgan (3309 m), Maly Chimen (2099 m). Rest on the shore of the Charvak reservoir. In the evening, return to Tashkent (120 km, 2 hours).

One of the rules, which has become the rule today, is the definition of the inner content of each ecotourism route, first of all, its goal, the object of ecotourism, the problems it faces and ways to overcome them (Taksanov 2005). Some experts recommend doing the following before you travel:

- determine the relationship between cities and surrounding areas, rural areas and natural landscapes;
- emphasis on the natural environment, landscapes, history of nature management;
- focus on the current state and prospects of landscapes under the influence of human activity, *i.e.*, on their dynamic state;
- planning the development of ways to positively change the ecological state of landscapes;
- determination of the type of protected areas and their status;
- Finding solutions to raise awareness of the environment and culture of travelers, etc.

When developing ecotourism routes, it is advisable to thoroughly study information about the topography, soil, rocks, surface and ground waters, climate, flora and fauna of the tourist site.

If additional information is provided about the geo-complexes of the area, nature conservation activities and the legal status of specially protected areas, tourist routes will be truly environmentally oriented.

Ecosan-tour, the international center for ecological tourism in Uzbekistan, presents the main ecotourism tours. Ecosan-tour organizes camel rides to Kyzylkum, as well as swimming on the canopy of mountain and Lowland Rivers, hunting and fishing throughout Uzbekistan.

The main routes of the ecosan type refer to the ranges of the Western Tien Shan, namely:

- Trekking Chimgan - Dzhailau wooden pass;
- Chimgan - a hike to the small Chimgan peak;
- Chimgan - Aksai gorge - hike to the Black waterfall;
- Trekking Chimgan-Sandy pass-Gulkamish gorge;

- Horse type Beldirsoy-Nurekota-Aksakota-Kumushkon.

The convenience of the geographical position of the Ugam-Chatkal National Park is an important factor in its rapid economic and social development in comparison with other regions, as well as in its special ecotourism status.

Ugam-Chatkal National State Natural Park is rich in mountains and forests, valleys and fields, rivers. Very interesting routes can be organized according to the main types of tourism in the region. The wide streams of rivers in the nature park together with their unique cultural landscapes and groves, medium-altitude mountains, consisting of orchards and walnut-spruce groves, and high mountains occupied by pastures, together form unique ecotourism small areas.

The natural and ecotouristic resources of the natural park can be used in various areas of ecotourism (mountain tourism, mountaineering, speleotourism, rafting, trekking, hiking, hunting, hobbies, ornithological, botanical species).

Among the objects of ecotourism, the role of natural monuments in the development of ecotourism is great.

The western Tien Shan Mountains are especially notable for the abundance of unique natural monuments. There are also caves here, which are a great place for those who love underground travel. In particular, there are natural conditions and opportunities for the development of snowboarding, paragliding and hang-gliding, cycling, motorsport, extreme sports, ecological tourism.

Natural monuments are unique, wonderful objects created by living and inanimate nature: caves, waterfalls, rocks of a wonderful shape, gorges, geysers, springs, open spaces, huge giant trees. Natural monuments are used for scientific, aesthetic, recreational, tourist, recreational and educational purposes.

Natural monuments are unique in the ecological, scientific, cultural, aesthetic and historical terms, irreplaceable, valuable natural and anthropogenic objects of republican, regional and local significance and of various origins. They differ in origin, content, purpose and importance.

Natural monuments can be formed on territories at the level of tracts, facies or any objects that are unique and picturesque parts of geosystems. These include areas with rare plant and animal species, various geological features, fossilized remains of plants or animals, caves, rocks, streams, waterfalls, springs, lakes, and more.

Natural monuments are unique, wonderful objects created by living and inanimate nature: caves, waterfalls, rocks of a wonderful shape, ravines, geysers, springs, exposed layers of rocks, centuries-old trees. For example: Kalasang waterfall, Ikhnoch lake, Balogardon cave, Haramzodasay, Galvasay, Sidjaksay, Aksarsay, Orkutsay, Avliyosay. Natural monuments are used for scientific, aesthetic, recreational, tourist, tourist, and recreational, educational purposes.

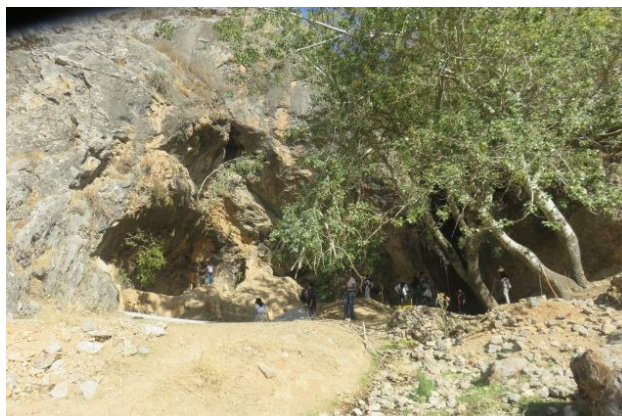
With the development of human creativity, the creation of industries, natural monuments have become objects of recreation and tourism. In particular, the role of natural monuments, which are a product of nature, is of great importance in the formation of health tourism, ecological tourism, which is developing very rapidly today, and its types, which make up an important recreation network.

Natural monuments are among the most widespread monuments in the Western Tien Shan ridge. The total number of them discovered to date exceeds ten thousand. This invaluable wealth is distinguished not only by numbers, but also by chronological coverage, variety of topics, and originality of plots, high artistic level and grandeur. Among them are petroglyphs found in Khojakent, Karakiyasay, Boshkizylsay, Chatkal, Parokandasay, Akhangaron and other places.

Below we describe some of the ecotourism sites.

Obirakhmat cave is an ancient place of cultural culture. It is located 100 km northeast of Tashkent, on the right bank of the Paltovsay at the foot of the Koksuv ridge. Obirakhmat cave was discovered by A.P. Mukhammadzhanov and S.K. Nasriddinovs were founded in 1962. The cave is wide arched, more than 20 m wide and 9 m long along the inner surface. It is dry and light, with a fresh waterfall flowing down from the cliff on the eastern edge. The entrance to the cave is facing south. The total thickness of 21 cultural layers, formed over a long time in the Obirakhmat cave, is 10 m. The remains of a human bone that lived 50,000 years ago were found in the Obirakhmat cave. The uniqueness of the find is that it is the first find on the Asian continent. The formation of the cave dates back to the first period of the Upper Paleolithic. The remains of human bones found in it are of great importance as a paleontological find.

Figure 1. Obirahmat cave



Shaurkol. At a distance of 275-295 km from Tashkent, after the village of Pskom, there is a gravel road to the Oygaing weather station. The rest can be reached on foot or horseback. Dam lake in appearance Shaurkol. Absolute height 2725 m, length 1464 m, width 414 m, average depth 9.7 m, deepest point 17.4 m, water surface area 400 000 m², volume 3.89 million m³.

As a result of melting snow and permafrost, the water level rises in July-August and goes beyond the dam. Both sides of the lake are surrounded by high mountains; a small path runs along the left bank. Aquatic animals are not found due to the extreme cold of the water. Due to the high altitude of Shaurkul, surrounded by perennial glaciers, the summer season is short, the night temperature drops to 0 ° C, and small ravines freeze and dry up. During the day it blows constantly, the temperature does not rise above +18 +20 ° C, there is precipitation.

Bodakkol. It is located 165-170 km from Tashkent, at an altitude of 1700 m above sea level, in the Bodaksoy basin, the left tributary of the Pskom River. From the confluence with the Pskom River, the road to Lake Bodaksoy is 8 km. Bodakkoli is a dam lake with a volume of 4,200 million m³, length 1,130 m, width 274 m, depth 13.5 m, some areas 23.2 m, water surface area 310,000 m². As a result of melting glaciers, the lake water level increases in June-August and decreases in October-November. The main reason for the decrease in water in the lake is that the large rocks in the lake dam are not densely packed and do not mix with the soil, so water leaks out of the dam. Bodakkoli differs from other regions by its clear spring waters, unique natural landscape and unique flora and fauna diversity.

Ikhnochkol. It is located 175-177 km from the city of Tashkent. The lake is trekking or horseback riding from the village of Pskom. There are three lakes in Ikhnochsoy, which are distinguished by their water level and absolute height. Lower Ikhnochkol has an absolute height of 2460 m, length 505 m, width 178 m, average depth 10 m, in some places 21.5 m, water surface area 900,000 m². The distance between the lower lake and the large lake above it is 250-270 m.

The Great Ikhnoch Lake is located at an absolute height of 2508 m, length 1525 m, width 216 m, depth 14.5 m, some areas 46.6 m, water surface area 330,000 m². The highest Lake Ikhnoch is located 1.5 km from the main lake, at an absolute height of 2724 m. The lake is 150 m long, 20 m wide, about 2 m deep, in some places 6 m, and the water surface area is 300,000 m². Spring on the lake begins in June and lasts only a month. July is warmer and starts to get colder in mid-August. Lake Ikhnoch, with its clear waters and unique beauty, allows tourists to have a good time.

Beldirsoy. It is the right tributary of the Beldirsay-Aksakata River. It begins on the western slope of Mount Great Chimney. The length of the river is 23 km, the area of the basin is 77 km², and the average annual water consumption is 1 m³/sec. Beldirsoy is saturated with snow and rain water, overflows in spring, and sometimes overflows when floods occur. There are 24 small tributaries of the Beldirsay, and skiing games are held in the basin of the river. Special facilities that meet international requirements have been built here.

Big Chimney Peak. The Great Chimgan Peak is a peak in the Chatkal Range of Western Tianshan. Big Chimgan Mountain is located 80 km from Tashkent. The Great Chimgan Peak is surrounded by the Chatkal River in the north, the Akbulak River in the east (the left tributary of the Chatkal), and the Chimyansay Valley in the south and west. The height of Chimgan Peak is 3309 meters. Rising vertically from the surrounding areas. It is mainly composed of Paleozoic limestones. The slopes of the peak intersect with many streams. Among them are steeply rising rocks, structures, and permanent snowdrifts.

Kulasa waterfall. Kulasa Waterfall is located about 100 km from Tashkent. The south-eastern part of the waterfall occupies the Charvak Reservoir; the western part occupies the Qaqsay mountain range, and is named after the Kulasa River near the village of Burchmulla. The height of this waterfall is 15 meters. Natural geographical bases of tourism development in Chimgan-Charvak resort-recreation zone (Shomurodova 2020).

Uzbekistan's tourism has a special place not only in Central Asia, but also in the world in terms of opportunities and potential. In the XXI century, "Uzbek tourism" is expected to develop rapidly and increase in importance as one of the main sectors of the economy. Because in a country with an ancient and rich history, the foundations are being laid for the development of many types of tourism. The decrees and resolutions on tourism attach great importance to the formation of a future tourism market in the country, the organization of services at the level of international standards, increasing the interest of world tourists in religious, cultural and historical sites, strengthening advertising.

Its geographical location and relief play an important role in the formation of the continental, arid climate of the Chirchik-Ahangaron natural geographical district. Inside the Eurasian continent, in the central part of Central Asia, the climate has become continental, arid. In the southwestern part of the county, the influence of cold, warm and humid air masses from the Arctic is great. These mountain masses also have a significant impact on the mountainous part of the county. Relief has a great influence on the composition of the local climate. The persistence of winter in the mountains allows snow to be stored for a long time and permanent snow and glaciers to form in the very high parts of the mountain.

3. Methods of Data Analysis

One of the peculiarities of the Chirchik-Ahangaron basin is the orographic structure of the area, the fact that the mountain ranges and the river valleys between them are oriented from north-east to south-west, and the absolute heights of the ridges (4500-4000 to 2000-1500 m) decrease. -The openness of the valleys of the Ahangaron Rivers in relation to the direction of oil-bearing air currents.

The average annual temperature in the plains and foothills is 11.6 (Charvak) in the north and 12.6 (Obliq) in the south, and decreases to the east depending on the relief (Table 1).

The total amount of radiation per square centimeter per year in the district is 150 kcal. The number of cold days with temperatures above 00 °C is 191 days in Piskom, 204 days in Aktash, 211 days in Charvak and 218 days in Akkavak. The days with a daily temperature above +100 are -178 days in Piskom, -200 days in Aktash, -203 days in Charvak and -215 days in Akkavak.

In the county, especially in the plains, summers are moderately hot, long. The average air temperature in July is 260-270 in the plains and 200-240 in the mountains. In summer, the absolute maximum air temperature can rise to 420-440 in the plains, and at altitudes of 2000 m does not exceed 310.

The winter is not so harsh in the area. The average air temperature in January in the plains is -0.70 °C in Akkava, -50 °C in Piskom, the absolute minimum is -290-320 °C. The amount of annual precipitation is very unevenly distributed in the district (Table 2). As a result, it receives a little more rain than in other mountainous regions of Uzbekistan. The average perennial amount of atmospheric precipitation in the basin increases from 270-300mm in the west to 900-1000mm in the northeast. This is slightly higher than in the Kashkadarya or Surkhandarya basins. Precipitation falls most of the humid air on the right western and south-western slopes. Annual precipitation is 895 mm in Aktash, 698 mm in Charvak (absolute altitude 877 m) and 735 mm in Piskom (absolute altitude - 1256 m) due to the fact that the Ugom mountain range blocks the western and south-western humid air masses. The amount of precipitation in the foothills is less than in the mountains - 435 mm in Akka and 514 mm in Chirchik. Every 100 m, the amount of precipitation in the Chirchik valley increases by 75-95 mm. This is a very large figure. In the mountainous and foothill regions, the highest rainfall is in the spring. 41% of the annual rainfall falls in the spring, 34% in the winter, 18% in the fall, and only 7% in the summer.

In winter, it snows all over the region, but the snow on the plains does not last long. Snowy days in winter are 65-129 days in the region. The thickness of snow in mountainous areas is up to 1 m.

Snow cover varies in the plains and foothills, and it rains and melts several times during the winter. Only in some years can stable snow cover be observed. In winter, the average snow cover days are 30-34 days.

Starting from an altitude of 1000 m, the average snow cover begins in late November - early December (Piskom, Beetroot). As the altitude increases, the composition of the snow cover also changes.

About 50% of the number of mountain glaciers in the country is located in the basin of the Piskom River. There are 250 glaciers in this basin. Their total area is 127.8 km². The largest glacier in the country - Ayutor-3 glacier is also located in the Piskom basin, with a total area of 3.8 km² (A.R. *et al.* 2003).

Garmsel winds blow in the mountains, valleys and plains of the district. Unfavorable weather events hail and strong winds are also observed. Mountain-valley winds blow mostly during the summer, when the weather remains the same. In this case, the daytime wind blows from the valley up the side slope, and at night from the mountain to the valley. In the foothills and lowlands, fyon (dry, hot winds) winds cause the air temperature to rise by 6-80 per day and a sharp drop in relative humidity. Strong winds in the region last from 10 to 30 days.

Table 1. Some climatic indicators of Chirchik-Ahangaron district

Meteorological station	Sea level. height	Minimum air temperature °C	Maximum air temperature °C	The average duration of the last cold fall in the spring.	Average duration of 1 cold in autumn	Periods that are not cold	Effective sum of temperatures °C
Chinoz	278	-33	42	2 IV	18 X	198	2176
Yangiyul	338	-32	43	31 III	28 X	203	2321
Buzsuv	473	-29	42	25 III	28 X	216	2330
Akkawa	556	-30	41	26 III	29 X	216	2313
Obliq	847	-32	42	31 III	29 X	211	2079

Table 2. Average annual precipitation in Chirchik-Ahangaron district (in mm)

№	Meteorological stations	Absolute height	Precipitation, mm	№	Meteorological stations	Absolute height	Amount of precipitation mm.
1.	Charvoq	877	698	4.	Obliq	847	408
2.	Akkawa	565	435	5.	Piskom	1250	735
3.	Chatqol	1938	504	6.	Angren	2289	289

The climate of the mountainous part of the district is unique, cool summers, snowy mild winters, fresh mountain air allow you to relax. Snow cover is especially important in the development of tourism. The presence of winter-stable snow cover allows skiing, sledding. Today, it is time to make full and effective use of all available climatic opportunities of the Ugam-Chatkal National State Nature Park in the development of tourism.

Waters. Determining the ecotourism potential of the Chirchik-Ahangaron region also requires in-depth knowledge of its waters. Because through their analysis, it is possible to find solutions to such issues as the selection of places for ecotourism bases, the location of ecotourism stops, the construction of water barriers, the identification of swimming opportunities, the provision of drinking water.

The hydrological regime of the Chirchik-Ahangaron basin was thoroughly studied by VL Schultz and R. Mashrapov (1969), and their work was used in writing this section. The largest rivers in the region are Syrdarya, Chirchik and Ahangaron. The length of the first in the region is 125 km. Chirchik and Ahangaron flow into it from the right (Table 7).

The Chirchik River, the wettest tributary of the Syrdarya, is named after the confluence of the Chatkal and Piskom tributaries. The 174 km long Chirchik River, which flows from the Charbagh Reservoir to its source, has an average annual flow of 55% Chatkal, 36% Piskom and 9% Ugom. The area of the basin is 13,240 km², and the average height of the basin above Khojaket is 2,548 m. The flow modulus is 21 l / sec / km². The snow line in the basin lies at 3500-4000 meters. It has 222 glaciers with an area of 173 km².

The perennial water consumption of the river in Khojikent is -224 m³ / sec. It is mainly saturated with ice, snow and rain water. 52.4% of the annual flow in the Chirchik River flows in March-June, 32.1% in July-September and 15.5% in October-February. Chirchik is joined by only two large streams after the Charbagh Reservoir, Ugom on the right and Aksakotasay on the left.

The remaining tributaries of the Chirchik consist of small streams, some of which reach the Chirchik River only during floods and mudslides, while others cannot reach them at all, as they run out of water due to scarcity and leak into the riverbed. The largest of these rivers are: Aktashsay, Shurobsay, Tovaksay, Ozodboshsay on the right and Golibasay, Parkentsay and Boshqizilsay on the left. In the plain part, no streams join the Chirchik River, on the contrary, in this part of the river its water is taken for irrigation through many irrigation networks - canals and ditches. For example, large canals such as Zakhariq, Karasuv, Northern Tashkent receive water from the Chirchik River. (V.L. Schchults, R. Mashrapov 1969.209-213 p.)

The potential energy resource of the Chirchik River is -2.3 billion sq. Km. and now only 31% of it is used. The Chirchik-Bozsuv cascade currently has 22 HPPs, the largest of which is the Charvak HPP with a capacity of 660,000 kW.

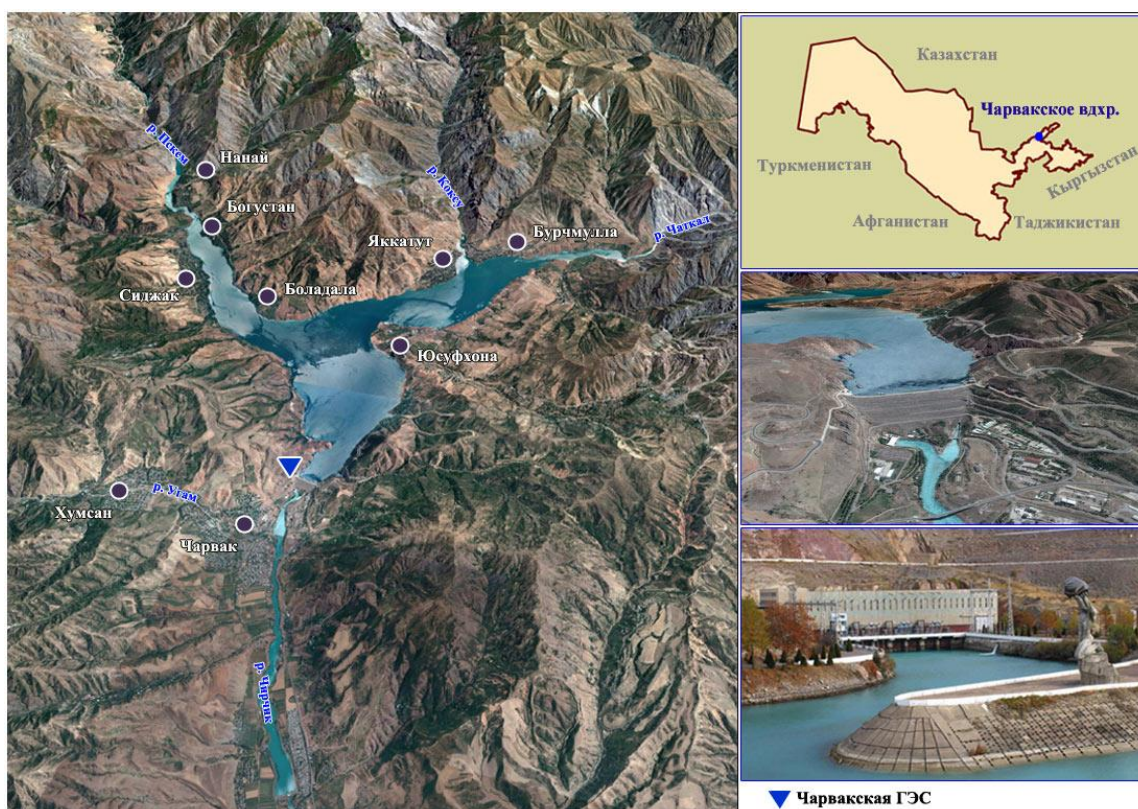
The Chatkal River, named Karagulja, begins on the southwestern slopes of the Talas Alatau. When the Karaqasmaq River flows into the Karagulja River from the right, the river begins to flow under the name of Chatkal. There are four major tributaries of the Chatkal River - the Sandalash and Koksuv rivers on the right and the Ters and Akbulak rivers on the left. The Chatkal River provides 55% of Chirchik's water. Its length is 223 km, the area of the basin is 6870 km², the average height is 2605 m, it has 82 glaciers with an area of 44 km². Perennial water consumption at the flow site is 124 m³ / sec. It is mainly saturated with ice and snow water. 55% of the annual flow in the Chatkal River flows in March-June, 29.7% in July-September, and 15.3% in October-February.

The Piskom River begins at the confluence of the Talas Alatau and the Piskom Ridge and is formed by the confluence of the 53 km long Maidontal River, which flows in from the right, and the 76 km long Oygaying River, which flows in from the left. The Maidontal River originates from a small lake on the northern slopes of the Maidontal Range, while the Oygayin River begins on the northwestern slopes of the Piskom Range at an altitude of more than 4,000 m, called Shovursoy. More than 40 streams flow into it. The river is saturated with snow and ice. The area of the basin is 2840 km², its average height is 2645 m, the flow modulus is 31.8 l / sec per 1 km². There are 140 glaciers in the basin with an area of 129 km². The average perennial water consumption at the confluence of the Piskom River is 82.2 m³ / sec. 46.9% of the annual flow in the Piskom River flows in March-June, 39.8% in July-September, and 15.3% in October-February.

One of the largest tributaries of the Chirchik River, Ugom Talas, begins on the southern slope of the Alatau under the name of Akburkhan.

Length - 70 km. the area of the basin is -889 km², the average height is 1941m, the average perennial water consumption is 21.2 m³ / sec, the average flow modulus is 23.9 l / sec / km³. Ugam is one of the rivers with very high water level (flow modulus). This is due to the fact that the area of the river basin is open to moist air masses. 63% of the annual flow in the Ugam River flows in March-June, 22% - in July-September and 15% - in October-February.

Figure 2. Charvak Reservoir.



Source: <http://www.cawater-info.net/bk/>

A dam and a hydroelectric power station were built in the narrow Charbagh gorge in the Chirchik valley, and the Charbagh reservoir was built in the Brichmulla basin above the dam. Here the rivers Chatkal, Koksuv and Piskom merged to form the river Chirchik. The construction is a river reservoir and was built to regulate the seasonal flow of the Chirchik River, to improve the water supply of 164,000 hectares of irrigated land in the

Tashkent oasis, to improve the supply of drinking water to Tashkent and its environs. Water capacity - 20006 million m³. The reservoir basin is 100,000 km² and its height is 900-4500 meters.

The reservoir is saturated by the Chatkal, Piskom, Koksuv rivers (96%), which belong to the snow-ice saturation type, and by more than 20 streams and precipitation (1% -856 mm). 95% of the water collected in a year is discharged through the hydropower plant, the rest is used for evaporation (0.5%) and leakage (1 m³ / sec).

The Charvak Reservoir was built in 1963-1977 and commissioned in 1978. The dam rises from rocks and soils and is 168 meters high. The area of the reservoir is 40.3 km², length - 22 km, average width - 1.8 km, the widest point - 10 km, the average depth - 49.4 m, the deepest point - 148 meters, the length of the shore - 69 km.

Recreation areas have been built around the reservoir.

There are many lakes in the district. Their area is small and of local importance. The most important of them are Shabirkul in the Piskom river basin (height 2800 m. Area 0.40 km², water volume 3.89 million m³, average depth 9.7 m), Ikhnachkol (height 2494 m. Area 0.330 km² water volume 4.800 million m³, average depth 14.5 m), Badakkul (height 1705 m. area 0.310 km², water volume 4.2000 million m³, average depth 13.5 m), Upper Urungach (area 0.120 km², water volume 1.500 million m³, average depth 12.6 m), Lake Karataka in the Chatkal river basin (area 1,070 km², water volume 48.8 million m³, average depth 45.6 m), Big Arashon lake in the Ahangaron river basin (area 0.12 km², water volume 0.56 million m³, average depth 4.7 m), Arashondumalak (area 0.18 km², water volume 1.43 million m³, average depth 9.7 m), Kokkol, located on the first right tributary of the river Koksuv (height 2000 m), Lake Ayrik, located on the right bank of the Koksuv River, 30 km above the village of Burchmulla. Their position as an ecotourism object is great.

When studying groundwater for ecotourism purposes, it is necessary to pay attention to their location, distribution area, depth, flow rate, potability, the presence of mineral waters.

The county is also rich in groundwater, which is mineralized and of medicinal value. The volume of fresh groundwater sources in Chirchik-Ahangaron district is 7375.19 thousand m³ / day. There are 54-60 0 thermal water reserves at a depth of 2000 meters. They are mineralized, have medicinal value. Artesian water basins of varying depths have been identified in the foothill plains of the county.

Rivers, lakes, reservoirs are of great importance for the mass recreation of workers. In water basins it is possible to organize water sports, swimming, fishing. Of particular interest are the waterfalls, which are a magnificent and beautiful view of nature, monuments of nature. They are interesting objects for tourists.

Conclusion

The development of ecotourism does not require hotels with a high level of service to tourists. In this type of tourism, traditional recreation and amenities are not considered to be the most important. It is enough to set up tents and set up campgrounds to see the unique landscapes of nature. However, this field requires a highly qualified specialist, i.e. an ecologist for each group, an employee who ensures the safety of tourists. In addition, all actions of firms offering ecological species must be carried out in accordance with the requirements of environmental legislation. Ecotourism is also a healthy lifestyle. Ecological tours often include sports and wellness treatments. Ecological tours can be offered by tour operators as a separate tour. For example, for those living in a mountainous area to visit natural sites or as additional services for those living in resort hotels, excursions to protected areas, a day trip to the mountains or lakes can be organized. Such mixed species are popular. There are several specific areas of eco-tourism. These are: trips to ecologically clean areas of nature that are virtually unaffected by nature to maintain ecological balance, aimed at increasing the ecological literacy and culture of tourists, trips to natural areas protected from the effects of human economic activities, etc. An optimal ecotourism strategy for Uzbekistan means creating new jobs and funding for the protection and restoration of unique natural monuments.

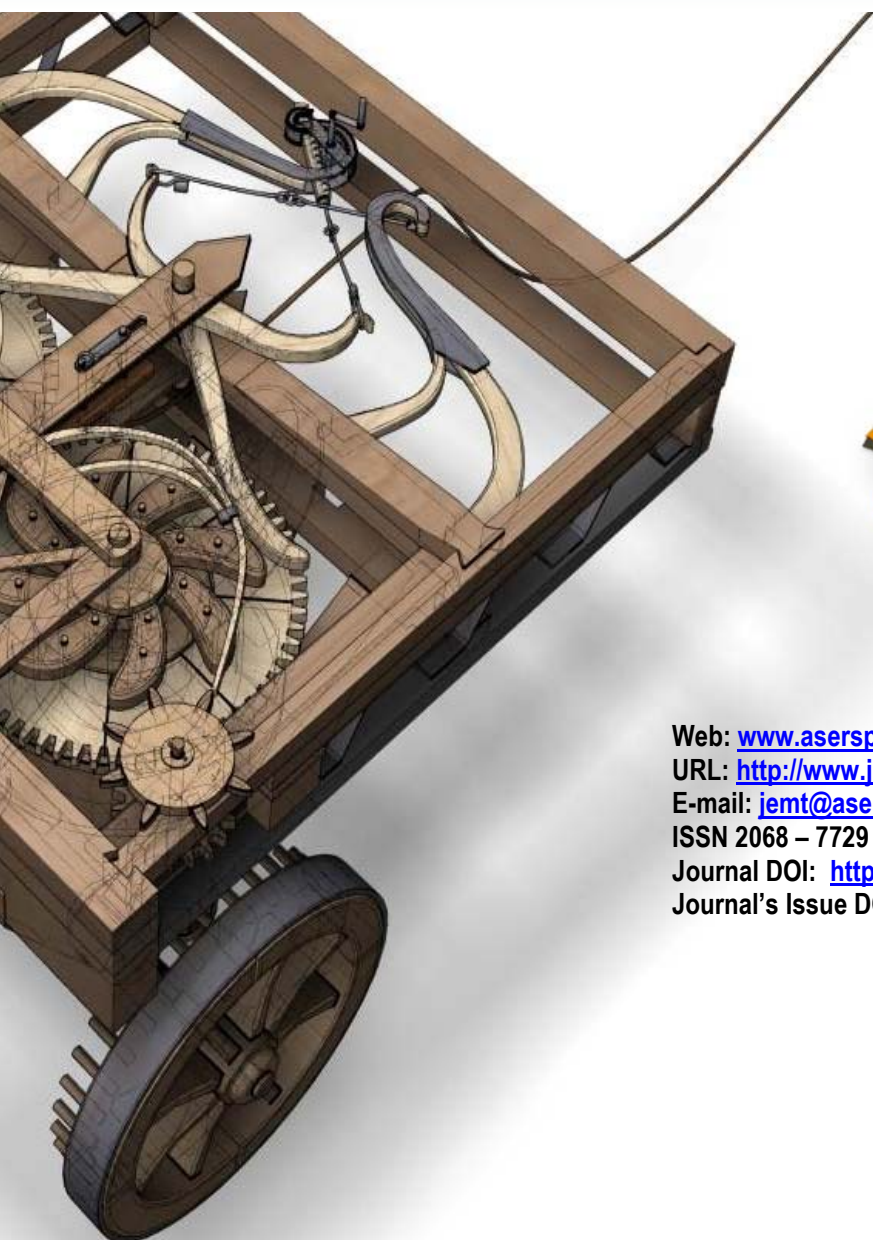
Acknowledgements

When determining the sites and routes of ecotourism in the Ugam-Chatkal State National Natural Park, it was difficult to find almost scientific sources, and there are no scientific articles here at all. However, when writing the article, the Tashkent Regional Tourism Administration helped us to collect information in practice, and the library of the National University of Uzbekistan helped to collect information theoretically. Therefore, we express our gratitude to the Department of Tourism of the Tashkent region and the library of the National University of Uzbekistan.

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