



## Ecological Aspects of Sustainable Development of Tourism in Jizzak Region

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Received 25<sup>th</sup> Nov 2023,  
Accepted 30<sup>th</sup> Dec 2023,  
Online 8<sup>th</sup> Jan 2024

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**ABSTRACT:** In order to improve the lifestyle of indigenous people living in ecotourism destinations, by increasing the number of livestock, expanding the scope of crops and gardens, preserving the natural landscapes of the area, rare plants and animals, and increasing the number of tourists to the area contributes to the increase.

**KEYWORDS:** Perennial trees, caves, natural springs, specially protected natural areas, state reserves, reservation, ecotourism, fauna and flora, ecology, ecoroute.

### Introduction

Currently, due to the escalating anthropogenic impact on the environment, various negative consequences such as environmental degradation, fluctuating air temperature trends, soil degradation, and a decline in biodiversity are being observed. Developing ecotourism that avoids harming nature is considered one of the important factors in mitigating these issues and addressing them in a rational manner. This is because ecotourism focuses on exploring and appreciating environmentally sensitive areas that are relatively unspoiled by human intervention. Moreover, the cultural and ethnographic characteristics of these regions are also of interest to travelers. Ecotourism also promotes the active social and economic participation of local communities and ensures income generation from such activities. This includes enhancing the livelihoods of communities living in ecotourism destinations, expanding agricultural and horticultural practices, conserving natural landscapes, unique flora and fauna, and contributing to the increase in the number of visitors to the region. Alongside the expansion of service offerings, appropriate infrastructure is being established. In consideration of these aspects, our government is paying special attention to the protection of ecology and the environment, as well as in the establishment of ecotourism and other specialized forms of tourism within natural reserves and protected areas [1,2].

"Ecological security refers to the state of safeguarding the natural resources within human-inhabited areas from depletion and pollution, as well as addressing specific threats to ecological diversity and the potential hazards resulting from human-induced risks (technogenic disasters)". In the present context, the

perspective of the human society aligns with the idea that ecotourism serves as a means to promote both ecological preservation and socio-economic development[3].

**The Purpose of the Research.** The significance of ecology and environmental conservation in the development of tourism and its potential in Jizzakh province is highlighted, aiming to assess the capacity and development of tourism activities in the region.

**Materials and Methods.** The research employs a methodology that focuses on understanding the anticipated changes in the ecological environment due to the growing impact of ecotourism in recent years, and utilizes this information to analyze and investigate the development of tourism as an integral infrastructure. This includes the application of various methods such as observation, comparison, empirical research, SWOT analysis, comparative analysis, and expert evaluation to identify the directions for the development of different components of the infrastructure.

**The Level of Research Conducted.** In the monograph "Uzbekistan's Ecotourism" by M. Khoshimkhonov, published by "Zarafshan Nashriyoti" Publishing House in 2009, specific natural areas of ecological significance are discussed, along with the ecological resources of the Kitab Geological Range. It provides information on the Zamin National Nature Reserve, encompassing the Chartangi Pass, the Uch Uchak, and the Mik Fortress [4].

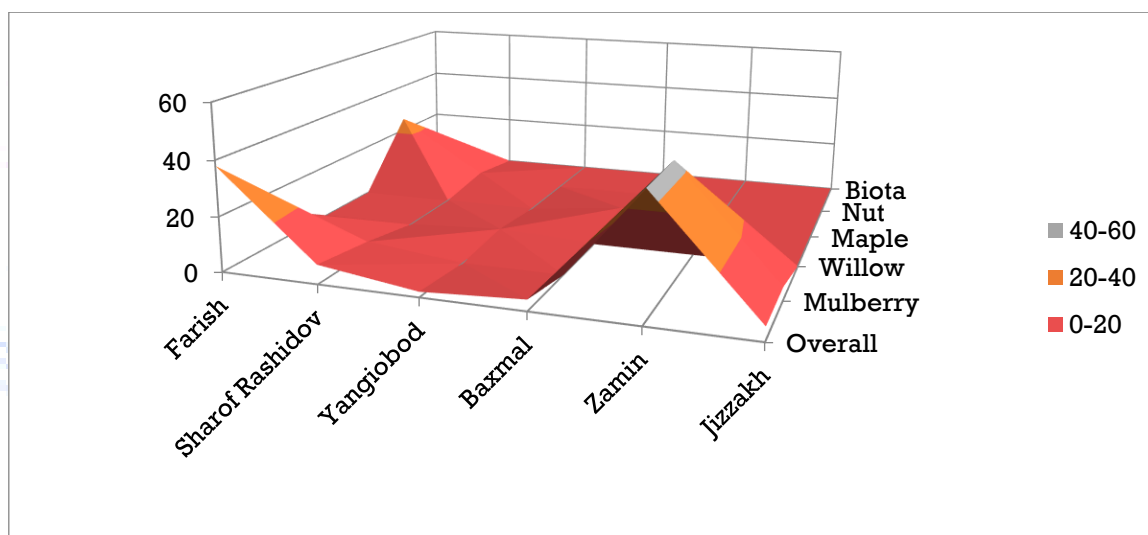
In the article "Perspectives on Developing Ecotourism in Jizzakh Province" by B.T. Kholmatov and others, published in the journal "Ученый XXI века • 2016 • No. 3-3 (16), Экономические науки," it is emphasized that Jizzakh Province possesses abundant natural resources, natural attractions, and collections, highlighting the immense potential for developing ecotourism in the region [4].

Insufficient attention has been paid to the impact of developing ecotourism on the preservation of the ecological balance and environmental conservation in Jizzakh province.

**Findings and Analysis.** According to data from the Tourism Organization (TO), tourism contributes to approximately 10% of the global GDP. It accounts for approximately 6% of the world's total national product, 7% of global investment, 11% of global consumer expenditure, 5% of all tax revenues, and provides employment for every 16 workers, one of whom is directly involved in the tourism sector. According to the World Tourism Organization, one-third of the world's population travels each year, representing a 4% annual growth in international tourism. In order to preserve nature in the province, the Zamin National Reserve, Zamin and Nurata state reserves, and the Arnasay Bird Sanctuary have been established. The historical and natural attractions, such as the Saykhunsoy petroglyphs, Peshagar gorge, and Khoja Bandi fortress, encompass a significant area. In terms of the number of protected areas and the land they occupy, Jizzakh province surpasses other regions in our country. For instance, there are 300 plant species listed in the Aydar-Arnasay botanical garden, with their systematic and biomorphological spectra classified. The forest stands comprise 9 tree species, 21 shrub species, 9 half-shrub species, 19 herbaceous species, 94 perennial grasses, and 146 annual grasses. The importance of their sustainability and significance in pastoral farming has been studied in the mountainous and semi-mountainous areas of the Nurata River Valley, where there are juniper forests and archaic juniper trees at altitudes ranging from 1900 to 3200 meters in the Turkistan Range. There are three types of juniper trees that are found in the Central Asian natural region: the Zarafshan, Saur, and Turkistan junipers, with the latter being predominantly located on the northern slopes of the Turkistan Range. Among these, the Saur juniper is the most commonly encountered. It can also be found between the Zarafshan and Turkistan junipers. There are also junipers in the Turkistan Range that are between 180 and 400 years old. These juniper trees are associated with high-altitude meadows, characterized by lofty grasses, vibrant colors, and lush barley. The "Red Book of Uzbekistan" includes 23 species of plants in the region, with 5 of them, such as Oshanin's peony, blue eremurus, giant tulips (Foster's tulips), and Mixel tulips, currently endangered or extinct. In order to preserve the balance between nature, population, and economy, Jizzakh province has established one national park, two reserves, and one special habitat. The Zomin National Park will be

discussed separately, along with the information about the Zamin and Nurata reserves and the Arnasay bird sanctuary. The primary purpose of the Nurata Reserve is to conduct research on and develop methods to protect mountain-steppe landscapes and the ecology of the Seversov ravine. This area is remarkable not only for its natural landscapes but also for its unique flora and fauna. For instance, this region is the sole habitat of the endemic species of juniper mentioned in the International Red Book. Additionally, there are over 100 historical and archaeological sites in the area. The warm-loving birds inhabit the area twice a year, changing their habitation based on the season. During the spring months, they move towards the north, while during the autumn months, they migrate towards the south. During these migrations, some birds rest and gather on the lakes, and more than 500,000 waterfowl spend the winter in the reservoirs. Examples of such birds include the greylag goose, crane, swan, pelican, heron, and various waterfowl. There are 13 migratory bird species listed in the International Red Book and 24 species listed in the "Red Book of Uzbekistan." The primary objective is to minimize the negative anthropogenic impact on the natural environment, slow down the succession (overgrowth) process, and restore damaged ecosystems. As a result, the establishment of ecotourism objects (canyons, caves, lakes, diverse tree species, rare plants and animals, natural rock formations), generation of lists of such objects, creation of coordinates for inclusion in ecotourism routes, and implementation of protective measures are essential topics for discussion.

A comprehensive list of various tree species in Jizzakh province has been compiled, including their coordinates and the analysis of their protected status (Table 1).



**1-diagramm. Characteristics of various tree species in Jizzakh province, including their type and distribution in different districts.**

It is evident from the diagram that the largest and oldest trees are preserved in the mountainous regions of Zamin and Farish districts, while the Yangiabad district has a relatively lower number of such trees. The diagram also shows that deciduous trees are the most abundant, followed by coniferous trees, and a smaller number of evergreen trees. Unfortunately, there is a lack of specific information and proper management practices for these trees (1-diagram).

**Table 1 Information about various mature trees in Jizzakh province.**

№	District	MFY	Species of tree	Number	Height of the tree (in meters)	Approximate age	Coordinators
1	Farish	Uchma MFY	mulberry	2	3,6	133	40.499703, 66.971150
2	Farish	Uchma MFY	mulberry	1	3,53	123	40.499703, 66.971150

3	Farish	Uchma MFY	mulberry	1	3,1	113	40.499703, 66.971150
4	Farish	Yassikechuv MFY	mulberry	2	3,65	133	40,283230, 67,044850
5	Farish	Garasha MFY	mulberry	1	3,15	118	40.385423, 67.0277606
6	Farish	Garasha MFY	mulberry	2	3,55	123	40.385617, 67.027306
7	Farish	Sayyad MFY	mulberry	1	3,66	133	40,332098, 67,243003
8	Farish	Nurak MFY	mulberry	2	3,72	133	40,21272016, 67,2229887
9	Farish	Dustlik MFY	biota	1	20,6	2003	40,427699, 67,039047
10	Farish	The forestry industry of Farish province	mulberry	8	6,3	253	40,422541, 67,042470
11	Farish	The forestry industry of Farish province	mulberry	9	7,3	353	40,424680, 67,035623
12	Farish	The forestry industry of Farish province	walnut	7	7,8	353	40.422006, 67.026274
13	Farish	The forestry industry of Farish province	walnut	6	8,1	353	40.431206, 67.027506
14	Farish	The forestry industry of Farish province	mulberry	2	5,6	203	40,439974, 67,031930
15	Farish	The forestry industry of Farish province	walnut	2	5,9	203	40.416740, 67.030776
16	Farish	The forestry industry of Farish province	walnut	3	6,4	253	40.416945, 67.024239
17	Farish	The forestry industry of Farish province	mulberry	2	6,6	253	40.425079, 67.041401
18	Farish	The forestry industry of Farish province	walnut	2	6,65	253	40,427699, 67,039047
19	Sharof Rashidov	The forestry industry of Jizzakh province	walnut	3	3,11	113	39.889691, 67.801070
20	Sharof Rashidov	The forestry industry of Jizzakh province	mulberry	4	3	113	39.889691, 67.801070
21	Yangiabad	Hujamushkent QFY	willow	2	3,3	113	39,877701, 68,692385
22	Baxmal	Mugol QFY	maple	4	9,2	553	39.721238, 67.781289
23	Zamin	Turkman MFY	mulberry	9	8,9	503	39.943592, 68.498067
24	Zamin	Turkman MFY	mulberry	28	5,7	203	39.943592, 68.498067
25	Zamin	G.Gulom MFY	mulberry	1	12,1	703	39.960641, 68.390769
26	Zamin	G.Gulom MFY	mulberry	1	2,9	105	39.961070, 68.390989

27	Zamin	Kattabag MFY	mulberry	1	4,6	153	39.958725, 68.397174
28	Jizzakh c.	Kassoblik MFY	mulberry	2	3,6	113	40.146098, 67.823124
29	Jizzakh c.	Nurliobod MFY	mulberry	1	3,2	108	40.101154, 67.871891
30	Jizzakh c.	Tashlak MFY	mulberry	1	5,9	203	40.126777, 67.826758
31	Jizzakh c.	Tashlak FY	mulberry	1	3,65	113	40.126664, 67.833423
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It is possible to present several classifications of ecotourism. According to the classification of the researcher V.V. Khrabovchenko, we have classified the indicators and classifications of ecotourism in Jizzakh region (Table 2).

**Table 2 Indicators and prospects of ecotourism in Jizzakh region according to V.V. Khrabovchenko's classification.**

Name	Classification	According to Jizzakh region
Scientific tourism	Participation in various types of natural research enables one to embark upon extensive field observations and surveys in the vast wilderness.	The Aydar-Arnasay canal system, along with the Turkistan Range, sets the stage for ornithological tourism routes.
Natural History Tours	Exploring the surrounding nature and local cultural heritage entails a harmonious blend of scientific and inclusive thematic excursions, which progress through specially equipped ecological pathways..	Traversing the national tapestry of Zamin, the charming hamlet of Peshagar, the enchanting locales of Farish, Bakhmal, Quytash, and their surrounding peaks, one can embark upon ecological journeys along these well-preserved routes.
Adventure tourism	By combining various forms of active engagement, such as indulging in open-air recreation, awakening the senses to imagination, enhancing the physical form of the traveler, and attaining sporting achievements, the exploration unfolds to obtain novel experiences.	The routes of sports and health-oriented tourism along the picturesque mountain range and the footpath trails along the Nurata mountain range offer enticing opportunities for enthusiasts and hikers alike.
Specially protected natural travel to the regions	The enchanting and exotic natural objects and phenomena that are situated within the protected natural territories attract numerous travelers.	Observing the exceptional flora and fauna of the Nurata, Zamin State Nature Reserves, Zamin National Nature Park, the Qizilkum Desert, and the Aydar Arnasay Water System.

**Analysis and recommendations.** According to our previous research and analyses, the development of ecological tourism in the Jizzakh region has a significant impact on the overall ecological state and preservation of the surrounding environment. Local communities are actively engaged in preserving the unique nature, natural formations, and abundant perennial trees within the organized ecotourism routes. This also minimizes detrimental activities such as increasing agricultural land for economic purposes, encroaching on natural habitats, or logging trees for fuel and construction. Instead, emphasis is placed on providing services to tourists, offering rental accommodations, and creating aesthetic souvenirs. However, it is evident that the holistic mechanism of nature, ecotourists, and local communities is not

fully functional in all areas with high ecotourism potential in the region. In order to properly establish this system in the future, we believe the following steps should be implemented:

- Formulating a list and coordinates of ecotourism objects in the areas with high ecotourism potential in the Jizzakh region;
- Ensuring the protection and installation of information boards for these objects;
- Incorporating all ecotourism objects in the region into ecotourism routes;
- Developing maps and mobile applications for these ecotourism objects.

#### References:

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