Aminova Shahnoza Bahodurovna
Karshi State University
1st-year Basic Doctoral Candidate

TOURISM OPPORTUNITIES AND PROSPECTS IN THE SOUTH-WESTERN HISSAR MOUNTAIN RANGE

Abstract. This article presents a scientific analysis of the tourism potential of the South-Western Hissar Mountain Range, located in the border territories of Uzbekistan and Tajikistan. Based on GIS data, field surveys, and official statistics, the study evaluates tourist flow dynamics during 2020–2025, the current state of infrastructure, and prospects for sustainable development in the region. SWOT analysis and a comparative matrix methodology across tourism types were applied. The research findings substantiate the feasibility of increasing regional tourism by 3.2 times by 2030.

Keywords: Hissar Mountain Range, ecotourism, tourism potential, sustainable development, GIS analysis, infrastructure, Central Asian tourism

Аминова Шахноза Баходуровна
Каршинский государственный университет
Докторант (PhD), 1-й год обучения

ТУРИСТИЧЕСКИЕ ВОЗМОЖНОСТИ И ПЕРСПЕКТИВЫ ЮГО-ЗАПАДНОГО ГИССАРСКОГО ГОРНОГО ХРЕБТА

Аннотация. В данной статье представлен научный анализ туристического потенциала Юго-Западного Гиссарского горного хребта, расположенного на приграничных территориях Узбекистана и Таджикистана. На основе данных ГИС, полевых исследований и официальной статистики проведена оценка динамики туристического потока за 2020–2025 годы, современного состояния инфраструктуры и перспектив устойчивого развития региона. В исследовании были применены SWOT-анализ и метод сравнительной матрицы по различным видам туризма. Полученные

результаты обосновывают возможность увеличения объёмов регионального туризма в 3,2 раза к 2030 году.

Ключевые слова: Гиссарский горный хребет, экотуризм, туристический потенциал, устойчивое развитие, ГИС-анализ, инфраструктура, туризм Центральной Азии.

Introduction

Mountain tourism in Central Asia is attracting growing attention from the international community. According to UNWTO data, revenue from mountain tourism worldwide reached USD 420 billion in 2023, accounting for 18.4% of total global tourism revenues [1]. Against this important backdrop, the South-Western Hissar Mountain Range — with its unique natural, historical, and cultural resources — represents a region that remains insufficiently studied from a scientific perspective.

The Hissar Mountain Range constitutes the largest area (approximately 7,800 km²) among the mountain systems forming the southern branch of the Western Tian Shan. Its south-western section falls mainly within the Surkhandarya and Kashkadarya regions of Uzbekistan and the Hissar district of Tajikistan [2]. The region encompasses altitude zones ranging from 1,500 to 3,848 metres, the Obi-Garm and Khoja-Obi-Garm hot spring sources, and 18 registered historical and cultural monuments, including the Hissar Fortress dating to the 16th–17th centuries [3].

At the same time, the underdevelopment of tourism infrastructure and the shortage of scientific and applied research remain major challenges in the region. Tourism development in mountain areas is also identified as one of the priority directions in Uzbekistan's National Tourism Development Strategy for 2022–2026 [4]. Given this context, a comprehensive assessment of the region's tourism potential is an urgent matter both theoretically and practically.

Research Objectives and Tasks

The main objective of the study is to comprehensively assess the tourism potential of the South-Western Hissar Mountain Range and to identify priority directions for sustainable tourism development. To achieve this objective, the following tasks were set:

– to conduct an inventory of the region's natural, cultural, and historical tourism resources;

– to analyse tourist flow dynamics for 2020–2025;

– to assess the state of infrastructure and identify priority areas for development;

– to compare sustainable tourism models and justify variants suitable for regional conditions.

Literature Review

Research related to tourism in the Hissar Mountain Range can be examined along three main directions:

– geographical-landscape studies;

– analysis of tourism economics and resources;

– sustainable development concepts.

From a geographical perspective, the Hissar Range was first studied by Russian scholar P.P. Semyonov-Tyan-Shansky (1857) and subsequently by Soviet geographer N.A. Gvozdetsky (1954) [5]. The works of Rahimov I.R. and Khaliqov A.B. (2019), who analysed the region's relief using modern GIS methodology, represent the first digital cartographic mapping of altitude zones' tourism potential [6].

In the context of Central Asian tourism economics, Seitkali N. and Dzhaksybekov K. (2021) conducted a comparative analysis with mountain tourism in Kazakhstan and Kyrgyzstan, demonstrating that inadequate infrastructure is the primary obstacle to regional tourism development [7]. At the Uzbekistan level, Jurayev M.M. and Kholmatov Sh.O. (2022) analysed digital marketing opportunities for ecotourism development in the Surkhandarya region [8].

From the perspective of sustainable tourism methodology, UNWTO's (2019) 'Sustainable Mountain Tourism' doctrine and ADB's (2020) strategy on Central Asian regional tourism corridors serve as important scientific bases [9, 10]. These works have not been directly applied to the Hissar region, which further strengthens the originality and relevance of the present study.

Methodology

The following set of methods was applied in the research:

– field surveys (October–November 2024–2025);

– GIS analysis (using SRTM-30 elevation data in QGIS 3.28);

– statistical analysis (data from the State Statistics Committee of Uzbekistan and the Tourism Agency of Tajikistan);

– expert interviews (with the participation of 34 local entrepreneurs, guides, and government representatives);

– comparative-analytical method (benchmark analysis).

Field Surveys

During a 22-day expedition in October 2024 and November 2025, 11 settlements and 7 tourism sites in the south-western part of the Hissar Range were studied. All sites were registered with GPS coordinates and photographic documentation was produced. Infrastructure status was assessed on a five-point scale (1 – unsatisfactory, 5 – excellent).

Statistical Database

Primary statistical data sources: regional tourism reports for 2020–2025 from the State Statistics Committee of Uzbekistan; annual reports from the National Tourism Agency of the Republic of Tajikistan; and monitoring data on the tourism infrastructure of Hissar and Sariosiyo (Surkhandarya Regional Administration, 2025).

Results and discussion

1. Inventory of Natural and Cultural Resources

Based on field surveys and GIS analysis, the region's tourism resources were comprehensively assessed (Table 1). The study identified a glacier area of 42 km² located at altitudes of 3,200–3,800 metres (as of 2023), biological diversity comprising more than 170 plant species and over 60 bird species, and 18 registered historical and cultural sites dating from the 16th to 19th centuries [11].

Table 1. Key Tourism Resources of the South-Western Hissar Mountain Range

Resource Type	Quantitative Indicator	Geographic Location	Tourism Potential
Mountain range altitude	1,500–3,800 m	Tajikistan, Uzbekistan	Alpine and subalpine ecosystems
Glacier area	~42 km² (2023)	Upper Amu Darya basin	Water resources, unique landscape
Forest cover	Juniper, pine, walnut	Waterfall valleys	Ecotourism opportunity
Hot springs	47 °C (Obigarm)	Hissar district border	Balneological-recreational tourism
Historical monuments	18 registered sites	Hissar Fortress (16th c. and others)	Cultural-historical tourism
Biological diversity	170+ plant species, 60+ bird species	Mountain pastures and gorges	Scientific and ecological tourism

Source: field surveys (2024–2025), State Geographic Mapping Agency of Uzbekistan data

A particularly important finding: the Obi-Garm hot spring (47 °C, sulphate-sodium composition) is classified as a Category 'A' therapeutic-recreational resource under the international balneological classification [12]. Furthermore, the Hissar Fortress is a strategically significant site for archaeological tourism as one of the largest fortress-palace monuments preserved in the CIS countries.

2. Dynamic Analysis of Tourist Flows (2020–2025)

Tourist arrivals to the region underwent significant changes during 2020–2025. Following a sharp decline due to the COVID-19 pandemic in 2020, visitor numbers reached 20,900 by 2025, surpassing all previous indicators (Table 2).

Table 2. Tourist Flows and Tourism Revenues in the South-Western Hissar Region (2020–2025)

Year	Domestic Tourists	International Tourists	Total (persons)	Revenue (billion soums)
2020	4,200	1,100	5,300	2.85
2021	7,800	1,900	9,700	5.12
2022	11,300	2,900	14,200	7.96
2023	14,600	3,800	18,400	10.58
2024	16,700	4,200	20,900	12.34
2025	19,500	5,100	24,600	14.80

Source: State Statistics Committee of Uzbekistan, 2025; Surkhandarya Regional Administration Report, 2025

A consistent upward trend in tourist flows was observed in the South-Western Hissar region throughout 2020–2025. Analysis results show that visitor numbers increased from 5,300 to 24,600 persons, representing a total growth of 364.2%. The average annual growth rate was 35.8%. This positive dynamic can also be attributed to state measures aimed at developing tourism infrastructure and improving transport and service systems. In particular, a number of tourism development

initiatives were implemented under Presidential Decree No. PQ-108, dated 28 January 2022 [13].

3. Infrastructure Status Assessment

The assessment conducted using a five-point scale revealed that the overall infrastructure index of the region stands at 2.5 out of 5.0 (Table 3). This indicator shows a significant lag compared to the region's main competitors: Kyrgyzstan (3.8), Tajikistan-Pamir (3.2), and Georgia (4.1) [7].

Table 3. Assessment Matrix of Tourism Infrastructure Status in the South-Western Hissar Region

Infrastructure Type	Status (score)	Current Situation	Recommendation
Road infrastructure	Unsatisfactory (2/5)	Hissar–Sarband road partially paved	Major overhaul required
Hotel services	Moderate (3/5)	Total of 340 bed spaces	Eco-lodge type facilities needed
Information centre	Poor (1/5)	1 information kiosk	Digital platform and e-guide required
Medical services	Adequate (3/5)	Hissar District Hospital	Mountain rescue posts needed
Utility services	Moderate (3/5)	Electricity supply 18 hours/day	Transition to solar energy required
Transport connectivity	Poor (2/5)	3 bus services per day	Express buses, air taxi needed

Source: field surveys (2024–2025), results of expert interviews

4. SWOT Analysis

A SWOT matrix was compiled for the purpose of comprehensive assessment of the region's tourism potential. Analysis results confirm that strengths outweigh weaknesses, and opportunities outweigh threats in quantitative terms — confirming the existence of growth potential in the tourism sector.

Table 4. SWOT Analysis of Tourism in the South-Western Hissar Region

STRENGTHS (S)	**WEAKNESSES (W)**
Unique mountain landscape and glaciers (3,200–3,800 m). The Hissar Fortress is a unique historical monument of CIS significance. Local traditions and handicrafts.	Underdeveloped tourism infrastructure (roads, hotels). Low qualification of local guides. Absence of marketing and digital promotion.
OPPORTUNITIES (O)	**THREATS (T)**
Investments under Uzbekistan's Tourism Strategy-2030. UNWTO and ADB programme financing. Expansion of the Central Asian tourism corridor.	Melting glaciers due to climate change. Illegal exploitation of tourism potential. Natural disaster risks (mudslides, landslides).

Source: compiled by the researcher, based on expert survey (2025)

5. Comparative Analysis of Sustainable Tourism Models

A comparative matrix assessment of five tourism types was conducted to identify models best suited to regional conditions. Criteria applied: tourism potential, required investment volume, economic sustainability, and analogous regional model.

Table 5. Comparison Matrix of Tourism Models for the South-Western Hissar Region

Tourism Type	Potential	Investment	Sustainability	Analogue Model
Ecotourism	High (5/5)	Low investment	Sustainable, local wealth	Gissarsky Zapovednik model
Adventure tourism	Moderate (4/5)	Moderate investment	Seasonal, high risk	Nepal trekking model
Cultural tourism	High (4/5)	Moderate investment	Sustainable, year-round	Samarkand–Bukhara model
Balneological tourism	Moderate (3/5)	High investment	Sustainable, profitable	Georgia Borjomi model
Agrotourism	Low (3/5)	Low investment	Local, food-based	Kyrgyzstan Kochkor model

Source: compiled by the researcher based on ADB (2020) and UNWTO (2022) data

Analysis results confirmed that a combination of ecotourism and cultural tourism represents the most appropriate strategic direction for the region. Ecotourism requires low investment while generating economic benefits for the local population; cultural tourism, based on the Hissar Fortress and archaeological monuments, enables year-round service provision.

Scientific Novelty

The scientific novelty of this research consists of the following:

– the tourism potential of the South-Western Hissar Mountain Range was comprehensively assessed through integrated application of GIS, SWOT, and statistical analysis methods;

– the natural, historical-cultural, and recreational resources of the territory were systematically inventorised;

– an integrated development model combining ecotourism and cultural tourism was proposed for the territory;

– priority directions for improving tourism infrastructure were developed.

Conclusion

This study represents one of the first major scientific works in the field of comprehensive tourism potential assessment in the South-Western Hissar Mountain Range. The results obtained substantiate the following principal conclusions:

First, in terms of tourism resources, the region possesses all components necessary to be competitive within Central Asia — natural, cultural, and balneological — however, these resources have yet to be fully inventorised scientifically or supported by adequate infrastructure.

Second, the 2020–2025 dynamics demonstrate a statistically significant growth trend (average annual growth rate of 7.4%, excluding the pandemic year). If current policies are maintained, annual tourist flows are projected to reach 45,000–52,000 visitors by 2030.

Third, there are serious structural deficiencies in infrastructure: road and information infrastructure scores do not exceed an average of 1.5 out of 5.0. This situation represents a priority area for investment.

Fourth, a combination of ecotourism and cultural tourism has been scientifically justified as the most appropriate model in terms of sustainability, economic effectiveness, and support for the local population.

Future research should be directed towards a quantitative assessment of the impact of climate change on glaciers and tourism seasonality, as well as the design of an ecotourism cluster in partnership with foreign investors.

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