

# ECOTOURISM IN PROTECTED AREAS AS A TOOL FOR SUSTAINABLE SOCIO-ECONOMIC DEVELOPMENT IN THE ADJARA REGION

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## Abstract

*Currently, Georgia is tasked with clearly defining the regional development priority areas that will ensure sustainable and stable growth. Alongside agriculture, tourism is one of the sectors with the greatest potential for economic development in Georgia. It contributes significantly to the socio-economic development of the country's regions and improves the well-being of the local population. One such priority area is the development of ecotourism in the Adjara region's protected areas. This paper discusses the ecotourism potential of Adjara, as well as the region's current ecotourism projects and associated challenges, which have an impact on its sustainable socio-economic development. It emphasises the importance of ecotourism in conserving biodiversity and improving the socio-economic conditions of local Adjara communities. Based on research findings, the paper presents recommendations for further developing ecotourism in Adjara while ensuring the protection of natural resources and contributing to the region's sustainable socio-economic growth. It also addresses the key issues hindering the development of ecotourism in Adjara's protected areas. It considers the risks arising from ecotourism activities that negatively impact the protection and preservation of natural ecosystems. Drawing on an analysis of ecotourism management in the region's protected areas, including visitor trends, ecological conditions, ecosystem diversity and the socio-economic status of local communities, the authors propose scientific and methodological recommendations. These recommendations aim to support the further development of ecotourism in Adjara, promote the protection of natural resources, facilitate the formation of a market for ecotourism products and contribute to the region's sustainable socio-economic development.*

**Keywords:** Georgia, Adjara, region, tourism, ecotourism, protected areas, ecotourism infrastructure

## I. Introduction

### Relevance of the Topic

Against the backdrop of global climate change and the growing risk of biodiversity loss, ecotourism represents a sustainable form of tourism that promotes the protection and conservation of natural resources. In today's context, the development of ecotourism in protected areas is of great importance, as it does not compromise the integrity of ecosystems and involves travel that is mindful of nature.

For our region, ecotourism is not only a source of income but also a driver of infrastructure development, the growth of various business sectors, increased employment opportunities for the local population, the preservation of cultural and historical traditions, the advancement of folk crafts, and more. Therefore, studying the challenges of ecotourism development in the protected areas of the Adjara region is particularly relevant. In addition to preserving ecological safety,

ecotourism has the potential to generate significant economic benefits and contribute to the region's sustainable socio-economic development.

### **Research Objective**

The objective of this study is to examine the challenges associated with organizing and effectively developing ecotourism, and to develop appropriate scientific and methodological recommendations to address these challenges. These recommendations aim to ensure effective coordination among the region's economic actors and contribute to the sustainable socio-economic development of the Adjara region.

### **Research Tasks**

To achieve this objective, the study addresses the following tasks:

- To analyze the ecotourism infrastructure in the protected areas of the Adjara region.
- To examine the impact of ecotourism on the economic conditions of the Adjara region.
- To assess the influence of ecotourism on the ecological state of protected areas.

### **Subject of the Research**

The subject of this research is the set of economic and economic-ecological relationships, as well as management issues, within the context of ecotourism development in the protected areas of the Adjara region — considered as a prerequisite for the region's sustainable socio-economic development.

### **Object of the Research**

The object of the research is the regional market for ecotourism products in Adjara, Georgia.

### **Research Methods**

The study employs methodological and regulatory materials from the Georgian National Tourism Administration, methods of economic analysis, synthesis, and evaluation, as well as official data from the National Statistics Office of Georgia.

### **Scientific Novelty of Research**

This study explores the impact of ecotourism on the condition and diversity of ecosystems within the protected areas of Adjara. It develops scientific and methodological recommendations which, in the authors' view, will not only contribute to the formation and development of the regional ecotourism market, but will also have a positive influence on the further advancement and revitalization of the socio-economic development of the Adjara region.

## **II. New approach to risk forecasting**

Forecasting the risks associated with ecotourism in Georgia's protected areas is a critically important topic and represents a long-term, complex process. This process requires the detailed analysis of both natural and social factors. Several key aspects are essential in this regard:

- **Natural Changes:** Protected areas in Georgia are increasingly experiencing fluctuations in temperature and precipitation, creating variable conditions for biodiversity. Extreme weather events such as droughts and storms have a significant impact on areas where tourism is actively developing.
- **Tourism Pressure:** Tourist activity in areas with limited resources can have detrimental effects on wildlife and ecosystems. Land degradation, destruction of vegetation, and the decline of

animal populations are all associated with mismanaged ecotourism. Therefore, detailed monitoring is essential to identify potential risks in advance.

Risk forecasting in the field of ecological tourism—particularly in protected areas—is a vital tool for ensuring environmental, social, and economic stability. Below are several modern approaches that, in our view, are particularly applicable in the context of ecotourism development in Adjara:

- Environmental Risk Monitoring through GIS and Remote Sensing: Satellite and drone technologies provide spatial visualization of ecosystem changes and support early risk detection (e.g., landslides, forest fires, erosion). These tools can be used to track biodiversity shifts in Adjara’s protected areas, assess the impact of tourist flows on sensitive zones, and monitor forest cover changes via satellite imagery—serving as an indicator of tourism pressure.

- Tourism Pressure Assessment and Visitor Flow Management Based on Big Data: Using mobile data and online activity (e.g., Google Location Data, Booking.com trends), it is possible to analyze visitor dynamics and forecast tourism pressure. This allows for seasonal management strategies, and helps prevent overcrowding in sensitive locations within Adjara’s protected areas.

- Community-Based Early Warning Systems (CB-EWS): Involving local populations in risk forecasting and early response enables the collection of localized data and enhances prevention efforts. Ecoguides, entrepreneurs, and community members can participate in ecological threat monitoring and tourist education in case of weather-related or natural hazards.

- Integrated Risk Analysis Models in Ecotourism Management: A comprehensive platform that combines ecological, social, and infrastructural risk analysis enables balanced management. Risks can be integrated into strategic planning for Adjara’s protected areas, including the design of tourist trails that account for natural hazard zones.

- Climate Risk Forecasting Based on Modeling and Climate Scenarios: Climate data modeling reveals how temperature increases, changes in precipitation, and other factors could affect ecotourism infrastructure and natural environments. For example, forecasts can assess the impact of climate change on Kobuleti’s peatland ecosystems or analyze coastal infrastructure risk under scenarios of rising sea levels.

In conclusion, as ecotourism develops in Adjara’s protected areas, it is essential to incorporate risk forecasting using modern tools such as GIS, Big Data, climate modeling, and community-based systems. These approaches are fundamental for ensuring the resilience of both ecosystems and tourism infrastructure.

### III. Engage experts

In the contemporary global landscape, tourism has emerged as a sector of critical importance—not only as a source of national income, but also as a catalyst for infrastructure development, job creation, cultural heritage preservation, and the promotion of traditional crafts. Furthermore, tourism fosters both formal and informal international networks, contributing to increased foreign investment and the enhancement of a country’s global image [1].

Despite the intense competition in global tourism markets, maintaining competitiveness requires a well-thought-out, strategically planned, and flexible approach. Importantly, such strategies must prioritize not only short-term profits but also long-term and sustainable success.

Georgia currently faces the challenge of identifying priority directions for regional development that will play a crucial role in ensuring stable and sustainable progress. We believe that developing relatively new sectors—those capable of generating positive multiplier effects at the regional level—is a strategic necessity. One such promising direction for regional economic growth in Georgia is the development of ecological tourism [2].

Therefore, in our view, it is particularly appropriate to promote ecotourism in the protected natural areas of the Adjara region, where ecologically "untouched" and exotic natural landscapes make ecotourism especially attractive to both domestic and international visitors. In this context, ecotourism would focus on the integrated use of natural, cultural, and historical resources to create a complex and specific tourism product.

It is important to note that, as of today, Georgia largely possesses raw tourism resources but suffers from a distinct lack of fully developed tourism products – that is, market-ready offerings. Ecotourism has the potential not only to fill this gap but also to open new market segments. Simultaneously, it can serve as a key factor in the sustainable socio-economic development of Georgia's regions [2].

Ecotourism should thus be considered one of the priority directions for sustainable socio-economic development both at the national and regional levels. It offers the potential for substantial income while maintaining ecological safety, thereby aligning with the core principles of sustainable development.

As of 2024, according to the IUCN (International Union for Conservation of Nature) classification, Georgia has approximately 100 protected areas across six different categories, including: 14 State Reserves, 12 National Parks, 40 Natural Monuments, 26 Managed Reserves, 5 Protected Landscapes, 1 Multiple-Use Area.

These areas collectively cover approximately 912,862 hectares, which constitutes about 13% of Georgia's total territory [3].

Given that Adjara is one of Georgia's largest and most biodiverse regions, it is both timely and relevant to explore the current challenges and future prospects of ecotourism development in Georgia's protected areas, using the Adjara region as a case study. This approach allows for a clearer understanding of ecotourism's potential impact on the sustainable socio-economic development of the region.

The Adjara region is home to several officially designated protected areas [3]:

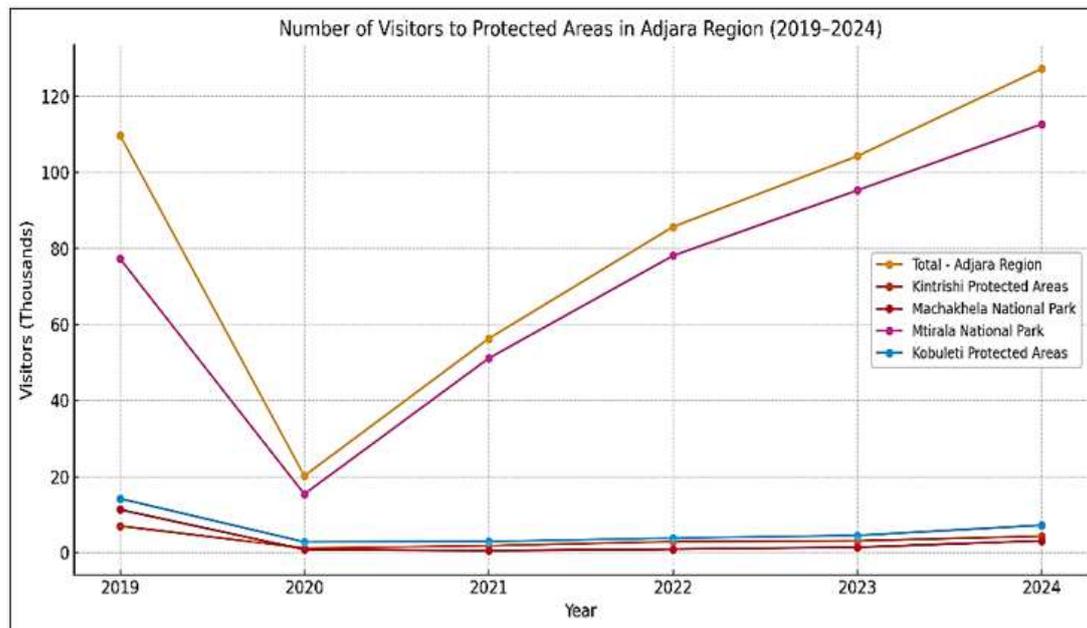
- Kintrishi Protected Areas. (*Kintrishi Strict Nature Reserve* – 3,108 hectares; *Kintrishi National Park* – 10,406 hectares.)
- Machakhela National Park – 7,333 hectares
- Mtirala National Park – 15,580 hectares
- Kobuleti Protected Areas. (*Kobuleti Strict Nature Reserve* – 316 hectares, *Kobuleti Managed Reserve* – 466 hectares.)

Below (Fig. 1), a diagram presents visitor statistics for the protected areas of Adjara from 2018 to 2023, based on official sources [3,6].

As shown in Fig. 1, the number of visitors to the protected areas of Adjara significantly increased between 2020 and 2024. This growth can be attributed not only to the popularization of ecotourism, infrastructure development, and the creation of new tourist products, but also to the fact that, following the end of the COVID-19 pandemic, people increasingly sought places where they could feel safe. Rather than visiting overcrowded areas, individuals have preferred environments that offer the possibility of maintaining social distancing, where they can feel secure and protected.

The tourism sector of Georgia is now facing the challenge of more actively developing ecotourism, which involves the synergy of tourism with the protection of natural resources. Additionally, ecotourism has the potential to attract funding not only for environmental protection in the region but also for its economic and socio-cultural development. Furthermore, through the development of this type of tourism, the local population will have the opportunity to turn the income generated from tourism services into an additional source of revenue.

In the process of implementing ecotourism activities in the protected areas of Adjara, both direct and indirect impacts are observed, which have both positive and negative effects on wildlife (see Table 1).



**Figure 1:** Visitor Statistics for Non-Protected Areas in Adjara from 2019 to 2024

**Source:** Compiled by the authors based on the reports of the Agency of Protected Areas of Georgia for the years 2019–2024.

**Table 1:** Positive and Negative Effects of Ecotourism on Wildlife.

Type of Impact	Form of Impact	Positive Effects	Negative Effects
Direct	Tourists' Movement	Strengthened biomonitoring, increased awareness	Animal Disturbance, Vegetation Degradation, Invasion of Non-Native Species
	Infrastructure Development	Environmentally safe trails	Soil erosion, destruction of natural landscapes
Indirect	Economic Pressure	Employment for the local population	Overuse of natural resources
	Urbanization and Commercialization	Improvement of infrastructure	Fragmentation of ecosystems, commercialization of the environment

**Source:** Table compiled by the authors based on interviews with specialists working in the protected areas of the Adjara region and on personal observations.

Based on interviews with specialists working in the protected areas of the Adjara region, it can be stated that the management of these areas is carried out with adherence to established guidelines and best practices. Rangers pay particular attention to ensuring that tourists access the protected areas only through designated routes, which significantly contributes to the preservation and protection of vital vegetation cover.

The protected areas are equipped with designated facilities for travelers, including waiting areas, overnight shelters, designated fire pits, tenting areas, picnic tables, and waste disposal zones. These infrastructural elements significantly reduce the risk of wildfires, enable proper sanitation management, and help prevent uncontrolled trampling, the spread of invasive species, and disruptions to the ecological balance of natural ecosystems.

The construction of ecological trails within protected areas is of great importance, as it allows for the regulation of tourist flow within sensitive zones, minimizes trampling of vegetation, and supports long-term conservation efforts.

Although the ecotourism infrastructure in Adjara's protected areas is relatively well developed, there are still certain risks that pose challenges to the conservation and maintenance of biodiversity [5]. Environmental pollution, primarily caused by visitors' negligence, most often involves solid waste. We believe this threat can be mitigated through improved visitor awareness and the enforcement of fines. Noise pollution, which disrupts the recommended quiet zones in protected areas, is another concern—particularly as it can disturb bird populations and other wildlife.

Despite these negative aspects, ecotourism also offers clear benefits that support the sustainable development of the Adjara region. Below, Table 3 presents the key factors that support the development of ecotourism, along with an overview of the risks that could negatively impact the region's path toward sustainable development (See Table 3.).

**Table 3:** *Positive Aspects of Ecotourism Influencing the Sustainable Development of the Adjara Region and the Risks of Its Negative Impact on the Regional Sustainability Process*

#	Positive Aspects of Ecotourism Development	Risks of Negative Impact of Ecotourism (In Case of Poor Management)
1	Increase in tax revenues from ecotourism and related sectors	Existence of "shadow" tourism businesses
2	Development of ecotourism	Rapid growth of ecotourism (at the initial stage)
3	Increase in the number of tourists	Rapid increase in the number of tourists (at the initial stage)
4	Stimulation of the development of ecotourism-related sectors and increase in their revenues	Intensification of waste collection and recycling issues due to increased tourist flow
5	Stimulating the improvement of infrastructure (roads, communications, education)	Loss of tourist attractiveness
6	Enhancing the tourist image of the Adjara region through unique and high-quality tourist services	Negative impact on the region's environment, degradation of ecosystems
7	Creation of new jobs	Overuse of natural resources
8	Increase in local population income	Disrespect for the local culture
9	Improvement of social conditions	Social dissatisfaction/conflicts
10	Economic development of the region	Economic loss

**Source:** *The table is compiled by the authors based on interviews with specialists working on the protected areas of the Adjara region and personal observations.*

Despite the undeniable positive aspects of ecological tourism development in the region, it is accompanied by certain negative effects, including:

- Overuse of natural ecosystems in ecotourism zones due to the increase in the number of tourists;
- Increase in noise pollution caused by the rise in the number of transportation vehicles;
- Mass influx of tourists, which negatively affects the local culture and way of life of the residents;
- Excessive anthropogenic pressures on the surrounding landscape, leading to the loss of both historical and architectural heritage and changes in the economic structure, which make local industries increasingly dependent on tourism, thereby affecting the region's identity and spatial character;
- Disintegration of the existing social structure, leading to the loss of traditional values and conflicts between various local groups;

- Concerning foreign investments, it should be noted that foreign entrepreneurs show limited interest. Due to the income levels of the Georgian population, they do not see them as substantial clients [7].

It is important to note that, in our case, the concept of ecological tourism in the Adjara region is based on the following principles [8]:

- Familiarization with the region's nature, local traditions, and culture;
- Minimization of negative impacts on the natural landscapes and socio-cultural communities of the areas to be visited;
- Promotion of the preservation of the region's nature and local socio-cultural environment;
- Ecological education for those involved in ecotourism activities (for local residents and tourists);
- Economic efficiency and contribution to the sustainable development of the Adjara region.

Sustainable development of the Adjara region refers to a form of socio-economic growth that ensures the well-being of the community in the short, medium, and, most importantly, long term. It is based on the principle that the needs of the present must be met without compromising the ability of future generations to meet their own needs. Sustainable development involves creating conditions for long-term economic growth while considering environmental protection to the maximum extent. Below is a schematic representation of the impact of ecotourism on the region's social, ecological, and economic sustainable development and its key directions.

The impact of ecotourism on the sustainable socio-economic development of the Adjara region can primarily be discussed through the following strategic directions:

- Economic impact (creation of new jobs; support for small and medium-sized businesses);
- Social effect (employment of young people in villages; promotion of cultural heritage);
- Environmental role (less environmental impact compared to mass tourism; raising ecological awareness).

One of the Georgian government's priority areas is the rational use of natural resources in the process of economic development, ensuring ecological safety and sustainability, and preventing the risks of natural disasters. When making decisions, it is essential to assess not only the economic feasibility but also the ecological and social effectiveness. This interconnection serves the well-being of humanity. To achieve this goal, promoting green economy is crucial, as it is one of the necessary instruments for the region's sustainable development. At the same time, fostering the growth of the green economy in the long term will reduce business costs and contribute to the development of new business directions.

Based on the analysis of ecotourism as a sector of the modern tourism industry, it can be concluded that ecotourism primarily requires support at the regional level. The regional tourism business associations should play a key role in organizing the ecotourism sector. In our view, they must be able to address the following tasks for the development of ecotourism in the Adjara region:

- Formation of information systems for regional ecotourism development programs and their methodological support;
- Creation of an effective mechanism for the formation of new ecotourism sites;
- Training qualified personnel for conducting entrepreneurial activities in the tourism business;
- Development of mechanisms for selecting and implementing prospective investment projects for ecotourism development.

Regional tourism business associations, in coordination with local administrations, regional funds, labor exchanges, and other interested organizations, should coordinate the formation of ecotourism infrastructure on-site. As for the mechanism for forming the infrastructure, it should be based on a state program that supports the development of ecotourism. This program should include: improving the normative-legal framework; providing and enhancing the methodological support for information networks; forming financial infrastructure with the participation of funds,

special banks, insurance companies, and investment institutions; as well as involving the industrial-technological and socio-business circles.

Additionally, it should be noted that the development of ecological tourism in Georgia, and specifically in the Adjara region, is hindered by the impact of certain factors, including:

- Incomplete legislation: The legal status of ecological tourism has not yet been fully resolved (the relevant laws and regulations are incomplete);

- The need for a clearer definition of the concept of ecological tourism development: The interests of cooperation and the implementation of economic mechanisms for management are not clearly defined;

- The regional municipal bodies inadequately utilize their governance functions, which define the political policies of municipal entities in the tourism sector, and their role in tourism organization and regulation. [4]

Ecotourism has the potential to attract resources both for the region's ecological safety and its economic and socio-cultural development, as the development of ecological tourism contributes to raising the population's awareness in the fields of ecology and ecological education.

## V. Conclusion

Ecotourism in Adjara is not only an alternative form of regional tourism but also an opportunity for the coexistence of nature and culture, economic development, and ensuring a sustainable future. Based on the analysis of the development of the modern tourism sector, we can conclude that ecotourism primarily requires support at the regional level. Regional tourism business associations should play a significant (key) role in the organization of ecotourism. In our view, they should ensure the following:

- Formation of information systems for regional ecotourism development programs and their methodological support;

- Establishment of effective mechanisms for the creation of new objects in the ecotourism sector;

- Training of the appropriate personnel for entrepreneurial activities in the tourism sector;

- Development of relevant mechanisms for selecting and implementing promising investment projects for ecotourism development.

CONFLICT OF INTEREST.

Authors declare that they do not have any conflict of interest.

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