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Recreational Landscapes and Load Norms in the Coastal Zone of Adjara

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Abstract

The coastal zone of Adjara represents one of Georgia's most resource-rich regions for tourism and recreation, owing to its favorable climatic conditions, proximity to the Black Sea, availability of mineral and thermal waters, diverse vegetation, and aesthetically valuable landscapes. The relatively gentle terrain further contributes to the formation of a comfortable climate that enhances the attractiveness of the region for visitors. In recent years, the number of vacationers in both coastal and mountainous areas has been steadily increasing, placing considerable pressure on recreational landscapes. Estimates indicate substantial variation in recreational load: from approximately 10 people per hectare in less crowded areas such as the Akhalsofli plain, to 100 people per hectare in heavily utilized areas such as Batumi. In hilly regions, the carrying capacity depends on slope steepness, with loads averaging 25 people per hectare on slopes up to 10°, and decreasing to 10 people per hectare on slopes of 20–35°. These values are relatively high and point to significant overuse of the recreational natural-territorial complex, raising concerns about long-term sustainability. The findings highlight the need for balanced management strategies to ensure both the preservation of natural resources and the continued development of tourism in Adjara.

Keywords: recreation, vacationer, resort, climate, visitor

Introduction

Tourism and recreation are increasingly recognized as key drivers of regional development, contributing significantly to economic growth, social well-being, and cultural exchange (UNWTO, 2020). Coastal zones, in particular, possess high tourism potential due to the concentration of natural and recreational resources, including favourable climatic conditions, sea access, mineral and thermal waters, diverse vegetation, and visually appealing landscapes (Gössling & Hall, 2006). These factors collectively create unique opportunities for the development of sustainable resort and recreational industries.

The coastal zone of Adjara, located in southwestern Georgia along the Black Sea, exemplifies such a resource-rich region. The relatively gentle terrain frequently generates favorable microclimatic conditions, which, in combination with abundant natural assets, have established Adjara as one of Georgia's leading tourist destinations. In recent decades, both the coastal and mountainous areas of the region have experienced steady growth in the number of vacationers, reflecting broader global trends of increasing tourism demand (Sharpley, 2020). The coastal zone of Adjara, Georgia, is endowed with abundant tourist and recreational resources. Its mild and relatively gentle terrain contributes to the creation of a "comfortable climate" during certain periods of the year. Significant natural endowments—such as the climate moderated by the Black Sea, mineral and thermal waters, rich vegetation, and attractive landscapes—serve as key factors fostering tourism and recreation development in the region.

In recent decades, Adjara has experienced a steady increase in vacationers in both its coastal and mountainous territories (Tourism Institute, Georgia; Cushman & Wakefield Georgia, 2023). Batumi, as the coastal centre of Adjara, illustrates this rising demand: its humid subtropical climate, substantial sunshine hours, warm sea temperatures, and lush vegetation make it an appealing all-season destination (Travel in Georgia: Climate – Adjara; GoBatumi). However, such growth has led to observable stress on the natural-territorial complex, particularly through high densities of recreational use.

This research builds on prior and related work. For instance, Putkaradze et al. (2023) examined tourism challenges and resource usage in mountainous Adjara (Beshumi resort), emphasizing the need for sustainable management of natural recreation resources; likewise, studies of rural tourism development recovery in Adjara after COVID-19 (Beridze, Kordzaia, Diasamidze & Beridze, 2020) highlight growing demand and attendant pressures on infrastructure and environment. These precedents underscore the urgency of quantitatively understanding load capacities across different terrain and usage regimes for coastal Adjara, particularly as tourism continues to expand.

However, this growth has also introduced significant challenges, most notably the overloading of recreational landscapes. Current estimates indicate that the recreational load varies considerably across Adjara: approximately 10 people per hectare in relatively low-use areas such as the Akhalsofli plain, around 30 people per hectare on average, and up to 100 people per hectare in highly concentrated destinations such as Batumi. In hilly areas, the carrying capacity is strongly influenced by slope inclination, with acceptable loads estimated at 25 people per hectare on slopes up to 10°, but only 10 people per hectare on slopes between 20° and 35°. These figures suggest that certain areas may be experiencing considerable overuse, which could lead to environmental degradation and long-term disruption of the natural-territorial complex if left unmanaged.

The aim of this paper is to examine the recreational use of the coastal zone of Adjara, with a particular focus on assessing recreational load and its ecological implications. By evaluating load norms in relation to landscape characteristics, this study seeks to identify thresholds that will help preserve ecological balance while supporting the continued development of the resort and tourism industry in the region. Addressing these issues is essential for ensuring that tourism growth in Adjara remains both environmentally sustainable and economically beneficial.

Methods and Materials

This study is based on a combination of qualitative and quantitative research approaches, integrating geographical and statistical methods to ensure a comprehensive analysis of tourism and recreational resources in the coastal zone of Adjara. A complex methodological framework was employed, which included comparative–geographical analysis, statistical analysis, and synthesis of secondary data.

The research relied on diverse sources of information. Existing literary and scientific publications formed the theoretical foundation, while cartographic materials were used to examine spatial patterns and regional differentiation. In addition, digital and online resources provided updated datasets and complementary information relevant to the study objectives. Official statistical data and reports obtained from the Department of Tourism and Resorts of the Autonomous Republic of Adjara were also incorporated, serving as a key empirical basis for assessing the dynamics and current state of tourism development in the region.

All collected data were systematically processed, compared, and interpreted within the framework of geographical analysis. The comparative–geographical method allowed for the identification of spatial and temporal variations in tourism–climatic resources, while statistical techniques facilitated the evaluation of quantitative indicators and trends. This integrated methodological approach ensured the reliability and validity of the research findings.

Results

Analysis of statistical data obtained from the Department of Tourism and Resorts of the Autonomous Republic of Adjara reveals a dynamic pattern of growth in tourism over the past two decades, alongside notable fluctuations influenced by socio-political and global factors. Between 2005 and 2020, the total number of tourists visiting Adjara exhibited significant growth. In 2005, the region welcomed 147,000 visitors, predominantly domestic tourists (120,000), with international arrivals accounting for 27,000. By 2006, this figure had risen to 250,000, comprising 182,523 domestic and 67,447 international tourists, marking a substantial growth of approximately 70% within one year. Notably, Armenia, Turkey, and Azerbaijan were the primary sources of international visitors in this period.

In 2007, the upward trend continued, with total arrivals reaching 352,085, representing a 19.1% increase compared to 2006. Domestic tourism grew strongly (239,786 visitors), reflecting increased local mobility and interest, while international tourism reached 112,299 visitors. Early 2008 also saw growth, with August data showing a 25% rise in total arrivals compared to the same period in 2007. However, the escalation of geopolitical tensions following the Russian aggression led to a decrease in total visitors by the end of 2008, which dropped to 285,000. This decline was driven primarily by

reductions in both domestic and international flows, although notable increases were observed from certain countries, including Israel (+82%), the USA (+45.3%), and Great Britain (+80%).

By 2009, tourism numbers rebounded sharply to 554,150, indicating strong recovery and sustained growth. Turkey and Armenia remained the leading sources of international visitors, followed by Azerbaijan and Israel. This recovery reflects Adjara's resilience as a tourism destination, supported by diverse recreational offerings and improved infrastructure. Over the following decade, tourism continued to expand significantly, with a notable surge in 2017, where visitor numbers increased by 98% compared to 2016. Key attractions such as the Machakhela and Mtirala routes, wine cellars in Keda, and cultural heritage sites in Khulo emerged as popular destinations.

Table 1. Number of visitors to Adjara (materials of the Department of Tourism and Resorts of Adjara 2024)

	2019	2023	2024 (January-June data)	change % 2019-2024	change % 2023-2024
Visits by foreign visitors	768 427,1	995 630, 3	932 267, 4	21,3%	6,4%
Internal visits	824 855 ,7	910 917, 3	1 001 101, 4	21,4%	8,8%
Sum	1 593 282,83	1 915 547,61	1 933 368, 77	21,3 %	0,9%

The COVID-19 pandemic (2020–2021) caused a sharp decline in tourism, consistent with global trends. However, preliminary data from the first half of 2024 indicate a strong recovery (Table 1), with 1,993,282 visits recorded — a 1% increase compared to the same period in 2023, and a 21.3% increase compared to the same period in 2019. This recovery underscores the continued attractiveness of Adjara as a tourist destination and suggests a return to pre-pandemic growth trajectories.

Spatial analysis of the coastal area of Adjara reveals significant variation in recreational capacity of natural-territorial complexes (NTCs). Three categories were identified (Table 2):

High Recreational Capacity: These areas are characterized by diverse recreational resources, favourable topography, rich vegetation, accessibility, and high tourist attractiveness. Notable examples include the Batumi coastline from Gonio to Kvariati Beach. These areas host high tourist concentrations and well-developed infrastructure but are vulnerable to environmental pressures such as coastal erosion and infrastructure damage due to sea-level changes.

Medium Recreational Capacity: Areas with moderately favourable recreational conditions, often altered by human activities and including cultural–historical elements. Examples include Upper Makhinjauri, known for sulphurous thermal waters, Chakhati, Gvara, Machakhela Gorge, and Mtirala National Park. These sites offer balanced opportunities for nature-based tourism and cultural experiences.

Low Recreational Capacity: Landscapes with high levels of agricultural use and less diversity in recreational resources. These include certain hilly and floodplain areas with dense population settlements, where tourism potential is limited.

Table 2. Recreational load norms (from 20-30 m to 200 m above sea level in the coastal zone of Adjara)

Recreational areas	Area in ha	Slope of the area in degrees	Load per ha	Total load
Batumi	250 ha	25^0	15 people	3750 people
Mahindjauri	220 ha	20^0	20 people	440 people
Chakvi hill - hills	300 ha	$18,5^0$	25 people	7500 people
Green cape	280 ha	16^0	25 people	7000 people
Hutcubani hill - hills	320 ha	15^0	25 people	8000 people
Nobokvati	359 ha	22^0	15 people	6250 people

Alambari, Muhaetate hill - hills	600 ha	12- 15^0	30 people	18000 people
Hills of Akhalsopli and Gonio	800 ha	30-35^0	10 people	8000 people
Salibauri hill - hills	450 ha	$15,5^0$	30 people	13 500 people
Cape of Tsikhisdziri	750 ha	25^0	15 people	11250 people

Based on slope analysis, norms for recreational load in the coastal area of Adjara were developed to guide sustainable tourism planning. The expansion of tourism in the region has been supported by investments in infrastructure, including modern hotels, improved picnic areas, designated tourist facilities, and marked mountain-biking trails. Additionally, cultural and recreational events such as the Summer Festival, Rural Tourism Festival "Gandagana", and the International Bird Watching Festival have strengthened Adjara's tourism appeal.

Overall, the results demonstrate that Adjara has experienced sustained tourism growth over the past two decades, punctuated by occasional declines due to external disruptions. The diverse natural resources, cultural heritage, and strategic development of recreational facilities have collectively contributed to the region's resilience and attractiveness. However, continued monitoring of visitor flows and environmental impacts remains essential to ensure sustainable tourism development and the preservation of Adjara's unique natural–territorial complexes.

Conclusion

The analysis of tourism development in the coastal zone of Adjara demonstrates that the region possesses abundant and diverse recreational resources, including a favorable climate, varied terrain, rich natural and historical heritage, and valuable mineral waters. These resources are effectively utilized for tourism and recreation, supported by well-developed infrastructure, and present significant potential for further development.

The study highlights those certain areas, particularly the Black Sea coastal plains and the hilly natural–territorial complexes (NTCs) of Adjara, experience excessive recreational loads, often surpassing sustainable limits. This overloading poses potential risks to the ecological integrity of the region and underscores the need for proactive environmental management. To preserve the sustainability of these landscapes, measures such as soil loosening, afforestation, herb sowing, and erosion control should be systematically implemented.

Based on the assessment of terrain structure, load intensity, and the ecological capacity of the territory, the following zoning of recreational load is proposed:

High Recreational Load Zones: Plains and hilly areas, particularly park-like landscapes, where permissible loads may reach up to 30 people per hectare. In certain high-demand urban locations, such as Batumi, loads can reach up to 100 people per hectare.

Moderate Recreational Load Zones: Hilly terrains with slopes up to 10°, where the recommended load is approximately 25 people per hectare, and slopes between 20°–35° where loads should not exceed 10 people per hectare.

Low Recreational Load Zones: Forest–park landscapes where the permissible load should not exceed 3 people per hectare.

The determination of maximum recreational loads is grounded in ecological capacity assessments, ensuring a balance between tourism development and environmental sustainability. The continued growth of tourism in Adjara, especially in Batumi, requires careful planning that respects the natural and climatic conditions of the region. This approach will not only protect recreational landscapes but also optimize the economic benefits of tourism.

Sustainable tourism development in Adjara must be guided by the principles of rational resource use, integrating proper marketing strategies and effective management practices that preserve the ecological potential of the region. Ultimately, the success of tourism in Adjara will depend on harmonizing the needs of visitors with environmental preservation, ensuring that the natural and cultural wealth of the region remains a foundation for long-term tourism growth.

Competing interests

The authors declare that they have no competing interests.

Authors' contribution

All authors provided critical feedback and helped shape the research, analysis and manuscript.

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