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Article

The Impact of Sustainable Tourism of Forest Ecosystems on the Satisfaction of Tourists and Residents—An Example of a Protected Area, Vojvodina Province (Northern Serbia)

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Abstract: The importance of forest ecosystems in tourism and recreation to sustainable tourism (SUT) in protected areas (PARs) has been the subject of research in numerous studies. People are increasingly turning to nature and its values. To prevent impacts on forest ecosystems, protected area managers plan for SUT and recreation use. The SUT in the PARs is based on four main pillars of sustainability: ecological, economic, sociocultural, and institutional dimensions. In this study, the authors examined the significance of social and ecological elements in the evolution of sustainable tourism for residents and visitors of the Karadjordjevo Special Nature Reserve (Karadjordjevo), where the primary resource is the forest ecosystem. The aim of this research was to examine the state and prospects for the development of sustainable tourism in the nature reserve by observing the dimensions of sustainability. In addition, the aim was to determine whether sustainable tourism affects the satisfaction of residents and visitors of this nature reserve. The research employs a quantitative methodology and applies the *Prism of Sustainability* model, continuing the authors' previous research of nature-based tourism on the Balkan Peninsula. Based on the analysis of 1240 replies, it may be inferred that the four facets of sustainability significantly influence the state of tourism and that SUT greatly affects respondents' sentiments. The new insights from this research indicate that the respondents recognized the importance of sustainable tourism, although not all significant destination factors exist that can impact the protection of nature on the one hand and the development of tourism with no adverse environmental consequences on the other. The research results are important for the various SUT plans and documents related to the management of destinations with forest ecosystems.

Keywords: sustainable tourism; special nature reserve; Prism of Sustainability model; tourism and recreation

1. Introduction

The development of sustainable tourism (SUT) in forest areas as sensitive or endangered ecosystems, with weaker economic potential for the local population and economy



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and rich natural and ethno-social potential, can result in overall benefits and strengthen the ecosystem values of the destination [1–3]. Protection of flora and fauna within the framework of the management plan, along with its positive impact on sociocultural and institutional values, are important sustainable goals in the tourism growth of protected areas (PARs) [4–6]. In this way, certain undervalued values of the destination can be implemented in the tourism potential of the country or region [7–10]. As a result, this could lead to significant financial investments in management systems and the protection of these destinations, which would fulfill the economic criterion of SUT development.

Public policy in tourism can be seen through the creation of plans, regulations, strategies, guidelines, and development programs, which are directly related to the dynamics of the tourism market [11]. In this situation, there may be a discrepancy between the development policy that has been approved and the way it is being implemented [12]. Formal and informal institutional frameworks for managing tourist processes are assumed by different types of public policy. The so-called unwritten rules of a particular environment determine how well tourism policies are implemented [13].

The growth of tourism in a specific area also influences the growing number of investors in a range of service-based enterprises. As a result of rising infrastructural investments, the tourist destination is developing more intensely. All of this influences the creation of an attractive area and, consequently, a rise in the quantity of people who visit that location [14]. Investments in infrastructure are also increasing, so the intensity of the development of the tourist destination is increasing. All of this affects the formation of an area of increased attractiveness and, therefore, a rise in the number of guests coming to that location [15].

Within the framework of managing the growth of SUT in PARs, it is important to define the primary goals of tourism planning and expansion and to safeguard the locations used for all tourism activities [10]. This can be seen in Table 1.

Table 1. The primary goals of forest-protected areas for sustainable tourism.

Participants	Goals and Outcomes
Tourists	To make high-quality nature experiences available.
Tourism industry (including private and public sectors), tourism trade, and associations	Tourism growth; Maximizing profits for travel agencies and tour operators.
State services and organizations dealing with the promotion of forest tourism	Economic, social, and ecological growth of sustainable forest tourism; High-quality operators and experience.
Local community	Increasing profits for local communities; Reducing the tourism impacts; Reducing the forest resource use.
Environmental managers, especially government environmental agencies	Ecological sustainability of tourist activities; Satisfaction of recreation goals; Using tourism to support conservation goals.
Non-governmental organizations dealing with the protection and preservation of the endangered flora and fauna of the forests	Minimizing threats by protecting and/or providing benefits to forest nature; Using tourism to support conservation goals.
Forests, nature, and environment	In general, the interests of nature are assumed to be reflected in the goals of the latter two groups of participants.

Source: Fennell [10].

The SUT, as a modern form of tourism activity, encompasses the realization of various benefits for tourism participants interested in improving tourism in a place with an ecosystem consisting of forests. The proper development of tourism should be viewed and studied through the dimensions of sustainability [1].

Establishing PARs is important for the preservation of forests, ecosystems, geological forms, plant and animal life, and the cultural and historical heritage of certain nations. Key goals of the growth of tourism in these locations are the protection of biocenoses, sensitive ecosystems, wet habitats, geodiversity, and many other potentials, which is why these areas should be preserved as unique destinations [8].

Expansion of local businesses that have direct links with protected area tourism, which has a significant role in local politics. The growth of local enterprises that support a positive relationship with nature, environmentally friendly products, and the avoidance of overtourism development must go hand in hand with the advancement of infrastructure to promote tourism [16–18].

Forest ecosystems are increasingly valued not only for their ecological functions but also for their role in supporting SUT. As interest in nature-based experiences grows, PARs have become important destinations that provide both recreational opportunities and vital ecosystem services. These areas fulfill a dual purpose: conserving biodiversity and supporting socio-economic development through SUT [19].

With rising tourist demand, forest ecosystems face growing pressures, including habitat disturbance and resource overuse. When not carefully managed, such impacts can undermine both conservation goals and the quality of visitor experiences [20]. Thus, tourism planning in forested PARs must prioritize ecological sustainability alongside development.

Community and visitor perceptions also play a critical role in the success of SUT. Support from local residents often depends on their perceptions of fairness, benefits, and participation in tourism initiatives. Likewise, tourists are more likely to engage in environmentally responsible behavior when they perceive a destination as sustainably managed [21].

Visitor and resident satisfaction plays a vital role in the development of SUT in PARs. For visitors, satisfaction is often shaped by the perceived environmental quality, effective management of tourism infrastructure, and the extent to which destinations uphold sustainability principles. These factors influence tourists' intentions to revisit and recommend the destination to others [22].

Satisfaction among both visitors and residents is essential for achieving long-term sustainability in tourism destinations, particularly in ecologically sensitive areas like protected forests. Visitors are more likely to report high satisfaction when their experiences align with expectations regarding environmental preservation, cultural authenticity, and service quality [23]. Meanwhile, resident satisfaction is strongly influenced by perceived community benefits, fair distribution of tourism income, and inclusion in tourism-related decision-making processes [24]. When tourism development successfully balances environmental protection, cultural preservation, and economic opportunities, it enhances both visitor experience and resident well-being—contributing to long-term support for sustainable tourism initiatives [25].

The main gap in the study of this article is that research on the dimensions and factors of sustainable tourism has been conducted initially. Additionally, the impact of tourism on residents and visitors of this forest area has not been investigated so far. Therefore, a comparison of the information gathered with the results of previous research could not be carried out. Due to the above, it cannot be determined whether the state of tourism in this forest park is declining, stagnating, or tending to grow. Furthermore, the role of residents and visitors cannot be analyzed chronologically. Previous research concerns a

qualitative methodology that examined the geographical potential of this forest PAR and the characteristics of the population inhabiting it.

The primary purpose of the study is to evaluate the role that the Karadjordjevo Special Nature Reserve (Karadjordjevo) can have in creating a sustainable offer. It is also necessary to examine whether existing ecological, sociocultural, financial as well as institutional factors contribute to the development of tourism that is in harmony with nature. Additionally, the specific goal of this study is to examine whether the four dimensions impact the satisfaction of the users of this reserve.

To gather information for this study, a questionnaire and a survey technique were used (Supplementary Materials). This allowed for the collection of information from a group of respondents regarding the individual opinions of locals and tourists concerning the SUT of Karadjordjevo.

The conceived research model—*Prism of Sustainability*—PoS, in this paper, is adapted to the analysis of the state of SUT in the PAR. Based on this, the basic research hypothesis H1 was defined, which is that SUT of the Karadjordjevo Special Nature Reserve significantly affects the satisfaction of residents and visitors. In addition to the main hypothesis, an auxiliary hypothesis H2 was defined—Official, social, cultural, economic, and ecological dimensions significantly contribute to the state of SUT in Karadjordjevo.

2. Materials and Methods

2.1. The Theoretical Framework

The fundamental idea of the study is an analysis of the role that a protected area can play in tourism planning. To develop national and local plans and documents, it is essential to consider the potential and status of tourism in harmony with the environment from the perspective of sustainable tourism. The idea of “sustainable tourism” refers to tourism that benefits the local economy, the environment, travelers, and residents [3–6]. One way to search for sustainable tourism in protected regions is by considering the advantages, opportunities, and possible environmental risks. The benefits of creating sustainable tourism are highlighted by the positive impacts that tourism has on the environment, people, and economy, the three fundamental pillars of sustainability. Negative effects reflect threats to tourism growth. These include overuse of space for tourism, traffic-related gas emissions, destruction of land and forests, contamination of water and wetlands, poaching, haphazard construction of tourist facilities, and other negative effects. As previously stated, the goal of studying sustainable tourism is to identify adverse effects and facilitate the implementation of planning ideas for the current situation to be revitalized. Furthermore, if the ecological, economic, sociocultural, and institutional requirements for tourism development are fulfilled, then studying sustainable tourism in a protected region can help create a distinctive eco-destination’s tourism offer [7–9].

An analysis of Karadjordjevo’s SUT situation, particularly how it affects the satisfaction of direct visitors to nature reserves, serves as the foundation for the modified PoS study paradigm used in this paper [1]. The previously mentioned authors’ study models rely on the gathering of information from participants regarding the state and potential for tourist development in protected areas (items), which were then categorized into four independent variables. The PoS model was used in the above-mentioned study to explore sustainable tourism by considering all four components of sustainability and how it affected respondents’ satisfaction. The study’s primary findings highlight how crucial sustainable tourism is to protect the local environment and wildlife. When establishing the interaction between space users and nature, tourism is a crucial topic. Additionally, studies emphasize how crucial it is to involve stakeholders and the local community in the planning, management, and assessment of the growth of strategic initiatives in these locations.

2.2. Study Area

The Karadjordjevo Special Nature Reserve is located on the left bank of the Danube in northeastern Vojvodina. It spreads over the territories of the municipalities of Bač and Bačka Palanka, including the settlements of Mladenovo and Bačko Novo Selo. The area covered by the reserve is 2955.32 ha (the expansion of the boundaries to 4184.24 ha is in progress). It extends from 45°14' to 45°22' N, and from 19°11' to 19°18' E [26]. The favorable geographical and touristic position makes for a good traffic connection with Bačka Palanka, Odžaci, and Novi Sad, through which it is linked to other cities. In addition, the forest reserve has a good connection with numerous European countries via the Danube nautical route. Figure 1 illustrates the forest reserve's position.



Figure 1. Location of the forest reserve Karadjordjevo. Source: Trišić, I., author.

The forest reserve Karadjordjevo is classified in category I—of international, national and exceptional importance. In accordance with the IUCN classification, the reserve is classified in the IV category [27].

Significant international protection statuses are:

- In 2004, the reserve was included in the group of PARs important for the Danube basin (ICPDR);
- The reserve is a member of the Danube Network Protected Areas (DNPA) as one of the five PARs in Serbia;
- The reserve belongs to the group of IBA areas;
- It is a member of the European Emerald network;
- Since 2017, the forest reserve Karadjordjevo has been part of the Bačko Podunavlje Biosphere Reserve. In addition to this, the biosphere reserve also includes the Gornje Podunavlje Special Nature Reserve, the Tikvara Nature Park, Junaković Forest, and Bukinski Hrastik [28,29].
- On 15 September 2021, the “Bačko Podunavlje” biosphere reserve was included in the “Mura-Drava-Danube” Transboundary Biosphere Reserve, which is the largest protected water reserve in Europe, designated by UNESCO (Austria, Slovenia, Croatia, Hungary, and Serbia). The European Amazon is a common name for this large biosphere reserve that encompasses the Mura, Drava, and Danube rivers, with a length of 700 km. The PAR covers about 930,000 ha. This area includes 13 separate PARs in the mentioned countries of Europe [30–33].

A total of 77% of the reserve is under the forest ecosystem. The flora and fauna of the forest reserve, in addition to the hydrography, represent a very important natural potential. The most significant part of the reserve is the Bukinski Rit. It is a typical fen-forest complex,

which represents one of the few preserved fens along the Danube. In forest areas, *Quercus robur* L. (about 17%), *Salix triandra* L. (about 12%), *Populus nigra* (about 11%), *Fraxinus excelsior* (about 10%), *Populus alba* (about 9%) and *Crataegus nigra* (about 5%) predominate, and other species [26]. Forests do not have a high density, but they have a significant function for the existence of other plant and animal species, in addition to a large water habitat. Among the strictly protected, protected, and rare species of plants, there is a significant presence of *Acorus calamus* L., *Nuphar alba* L., *Nuphar luteum* L., and *Trapa natans* L., which are important representatives of aquatic plants and represent a natural rarity. Many species have a limited range and are members of small populations.

Numerous elements have a substantial impact on forests' capacity for leisure as well as their resistance to harm from tourism and recreational activities, including habitat wetness, stand age, terrain inclination, stand population density, species composition, soil cover, and the existence of forest and vegetation [2]. A portion of the Pannonian Plain formed by the retreat of the Pannonian Sea thousands of years ago, is where the reserve is located. The soil in this reserve has an alluvial nature. This is a result of the Danube River's historical deposits. Since the area is lowland, there are not any notable shifts in elevation in the terrain. An immense aesthetic and functional contribution to this forest ecosystem is also made by water flora and lower shrub vegetation on land.

Among the 16 species of fish, we should highlight: *Esox lucius* (Linnaeus, 1758), *Abramis brama*, *Abramis ballerus*, *Alburnus alburnus*, *Aspius aspius*, *Carassius auratus gibelio*, *Leuciscus idus*, *Cyprinus carpio*, *Pseudorasbora parva*, and *Rhodeus sericeus* [27].

A special feature of this forest reserve is that in the part of the Danube next to the reserve, there is a rare natural fish hatchery that needs to be preserved. About 200 species of birds are recorded on the territory of the forest and wetland part of the reserve. Nesting birds that inhabit marsh areas. There are *Haliaeetus albicilla* (Linnaeus, 1758), *Ciconia nigra* (Linnaeus, 1758), and *Milvus migrans* (Boddaert, 1783). The presence of mammals is significant: *Neomys fodiens* (Pennant, 1771), *Lutra lutra* (Linnaeus, 1758), *Felis silvestris* (Schreber, 1777), *Martes foina* (Erxleben, 1777), *Mustela erminea* (Linnaeus, 1758), *Cervus elaphus* (Linnaeus, 1758), and *Sus scrofa* (Linnaeus, 1758) [26].

The area of Karadjordjevo is considered to have very significant social potential. In the territories of the Bač and Bačka Palanka municipalities, there are immovable cultural properties of exceptional importance, of great importance, and of importance for the Republic of Serbia. They represent the authentic cultural heritage of this part of Vojvodina. Among the essential buildings in Bač, we should single out the fortress, the Franciscan monastery, the hammam, the Roman Catholic chapel of St. Anthony the Hermit (a cultural monument), the Roman Catholic Church of St. Paul, and the Convent of the Nuns. Within the Franciscan monastery is the only medieval church in Bačka, which was built in the 12th century. The Bač fortress, built in the period between the 14th and 16th centuries, is in the meander of the Mostonga River. It has the shape of a geometric figure of a pentagon, which is decorated with towers that rise above the fortifications. Today, the spatial cultural-historical unit consists of the remains of a fortified castle as a legacy of the area where the medieval suburb was located. The initiative for the restoration of the Bač fortress was launched in 2005, and today, it is on the preliminary UNESCO World Heritage list. In 2018, the Bač fortress was awarded by the old European Union for the best project for the conservation of the fortress—"Europa Nostra" [26,27].

2.3. The Conceptual Model and Data Collection

The adapted model in this research is based on examining the state of SUT of Karadjordjevo, that is, assessing the impact of SUT in this PAR on the contentment of both locals and tourists. The study model known as the Prism of Sustainability (PoS) is designed

according to research models of SUT in various PARs [32–34]. Respondents perceived factors (items) that influence the SUT of tourism in Karadjordjevo. The items are presented in the questionnaire through sustainability's four independent variables: institutional, sociocultural, economic, and ecological. This can be seen in the display of the research model (Figure 2).

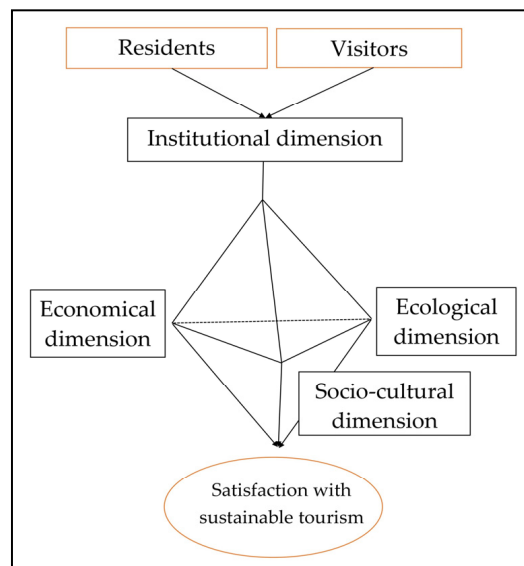


Figure 2. The Prism of Sustainability study model. Source: Trišić, I., author.

The PoS model was used for the first time in the institutions of the European Union and the United Nations when examining and demonstrating the usefulness of an integrated approach in 30 national sustainability studies [33]. After that, the model was adapted and further used in research on SUT in PARs around the world [34–41]. The initial research on SUT was based on three dimensions: economic, sociocultural, and environmental [34]. The original concept of examining SUT is based on this postulate, which means that numerous studies on SUT are focused on examining these three pillars of sustainability.

The fourth pillar, the institutional dimension of sustainability, was also covered in more in-depth research on sustainable tourism in protected areas. Studies that include the analysis of tourism through four dimensions have the potential to provide more significant scientific results, as the institutional dimension encompasses institutions, legislation, and managers of the protected area [42–45]. To consider tourism from four perspectives of sustainability, the authors created this study.

A positive ecological dimension can be achieved through the impacts of tourism on nature within PARs [46,47]. Economic sustainability concerns the local population's earnings from tourism consumption, often through the various tourism activities undertaken by visitors [48,49]. Economic sustainability is achieved through the availability of regional commodities and amenities for visitors, the employment of inhabitants, and the strengthening of the local economy [44–50]. Sociocultural sustainability is usually investigated regarding the ways that tourism affects the perceptions of local residents and visitors. The attitudes examined relate to the state of tourism in the PARs and the possibilities for development from local perspectives [42,43]. Examination of the state of SUT in PARs in recent research includes institutional sustainability as the fourth dimension of sustainability within the PoS model. This includes examining factors that indicate the importance of the role of institutions in the state of tourism, guide services, and trained representatives of residents, as well as monitoring the implementation of laws and other factors [41–45,51–56].

The study model includes examining factors in four groups (independent variables). Therefore, the importance of every component separately and each dimension of sustainability can be examined. Also, by examining the value of each dimension individually, their impact on the state of SUT in Karadjordjevo can be determined. Finally, by applying this model, the impact that SUT has on the respondents (residents and visitors) can be examined.

A printed and online questionnaire was used to survey the participants. Online questionnaires were administered through social media networks. On this occasion, anyone who wanted could be surveyed without any special choice or selection. Personal contact with visitors was made in the reserve itself and by going through the communities where the people reside. On that occasion, the printed questionnaire was filled out by the respondents in person. Using a random selection technique, the respondents were chosen. Respondents were freely contacted and asked whether they wanted to take part in the study during the in-person session. Every respondent was free to choose to complete the questionnaire or to stop at any moment.

Following the control, it was found that every questionnaire had been completed accurately. In all, 1240 respondents were surveyed, of which 705 were residents, and 535 were visitors. Implementing the online technique, 675 people in total (341 locals and 334 tourists) were surveyed. In-person interviews were conducted with 565 respondents, 275 of whom were locals and 290 of whom were tourists.

The settlements in which residents were surveyed are Bačka Palanka (47%), Mladenovo (29%), Karadjordjevo village (17%), and Bačko Novo Selo (7%). Of all tourists questioned, 44% were foreign visitors, and 56% were domestic guests. Countries from which international visitors are Hungary, Croatia, Bosnia and Herzegovina, Macedonia, Montenegro, Switzerland, Austria, Germany, Poland, Romania, and others.

Women comprise 56% of the total replies. With a range of 18 to 81 years, the average age is 42. Eleven percent of those surveyed finished elementary school. Of those surveyed, 46% completed secondary school. Vocational or academic studies were completed by 37%, while master's or PhD studies were completed by 6% of respondents.

The veracity of the filled questionnaire was confirmed personally. The reliability of the answers given and the obtained average values for each dimension were assessed using Cronbach's Alpha coefficient (α). Any value of $\alpha \geq 0.60$ can be considered reliable for statistical analysis [49,52,53]. Regression analysis of the effect of SUT on respondents' satisfaction evaluated the relationship between the independent and dependent variables. Statistical data processing was performed with SPSS v.25 software (IBM, Armonk, NY, USA).

There were 21 items in the questionnaire. The initial part of the questionnaire included questions related to the sociodemographic characteristics of the respondents. The second half of the questionnaire contained 17 items that were divided into four categories: institutional, ecological, economic, and sociocultural.

Four statements pertaining to respondents' satisfaction with SUT in Karadjordjevo were included in the third section of the survey. On a five-point Likert scale, with 1 representing the lowest value and 5 representing the greatest, respondents scored their answers. The survey was conducted from May to October 2024.

3. Results

After the questionnaires and collecting answers from the respondents, the statistical analysis of the data was started. Tables 2 and 3 show the same order of the survey's questions (items), which also corresponds to the design of the survey questionnaire (which had 21 items in total). The obtained average values (mean) and values of Cronbach's Alpha coefficient can be shown in Table 2.

Table 2. The mean values and Cronbach’s Alpha coefficient (α) of sustainability dimensions.

Items	Residents (n = 705)		Visitors (n = 535)	
	(α)	Mean	(α)	Mean
Dimensions of sustainable tourism				
Institutional dimension	0.789	3.45	0.811	3.53
Residents work as trained guides in the forest-protected area		2.14		2.78
There are local brands		4.11		4.14
Instructions on forest protection are followed		4.01		3.96
Information is available about the protection of the forest reserve, the history, and the culture of the population		3.54		3.21
Ecological dimension	0.809	3.63	0.781	3.70
There are activities of nature protection		3.09		3.11
There are tourist facilities and services in the reserve		4.12		4.21
There are facilities for tourists that do not have a negative impact on the environment		3.68		3.77
Economic dimension	0.804	3.08	0.859	3.46
There are benefits to tourism for the locals		3.22		3.15
Tourism impacts the local economy		2.84		3.03
Tourism contributes to the employment of residents		2.17		3.02
Local products are part of the tourism offer		4.03		4.02
Prices of domestic products and tickets are acceptable		3.12		4.09
Sociocultural dimension	0.811	3.77	0.869	3.87
Visitors are interested in domestic crafts and products		4.14		4.21
Visitors make contact with residents		4.09		3.89
Visitors are interested in local traditions and customs		4.15		4.33
Visitors visit local cultural facilities and events		3.25		3.28
Tourists visit historical sites		3.20		3.64

Items measured on a 5-point Likert agreement scale. α —Cronbach Alpha Reliability.

Table 3. Index of satisfaction.

Index	Residents (n = 705)		Visitors (n = 535)	
	(α)	Mean	(α)	Mean
	0.814	3.65	0.821	3.39
Tourism creates benefits for the forest (nature)		4.11		3.96
Tourism creates benefits for residents and visitors		3.52		3.28
There are possibilities for the development of tourism		3.87		4.03
I am satisfied with the tourist attractions		3.11		2.29

The answers given by respondents to the PAR’s four questions about their level of satisfaction with sustainable tourism were also included in the statistical analysis. Table 3 displays the values that were obtained.

Following the presentation of the respondents’ satisfaction with SUT and their own perceptions of sustainable characteristics, a straightforward linear regression was used to investigate the relationship between the sustainability aspects and respondents’ satisfaction.

After processing the data, the underlying statistical premise is that there is 32% satisfaction among residents ($R_1^2 = 0.319$) and 37% among visitors ($R_2^2 = 0.367$). Table 4 provides this information.

Table 4. Regression analysis of satisfactions incorporating aspects of sustainability.

Satisfaction	Residents		Visitors	
	β^1	<i>p</i> -Value	β^1	<i>p</i> -Value
Institutional	0.109	0.054	0.211	0.021
Ecological	0.203	0.041	0.203	0.111
Economic	0.105	0.021	0.101	0.001
Sociocultural	0.211	0.009	0.202	0.022

¹ Standardized β value used. $R_1^2 = 0.319$; $R_2^2 = 0.367$.

4. Discussion

After assessing the results, it can be stated that the respondents expressed the greatest agreement with the given statements and rated ecological (3.63 and 3.70) and sociocultural sustainability (3.77 and 3.87) the highest, while economic sustainability (3.08 and 3.46) was rated the lowest. The results of this research indicate the importance of ecological and sociocultural factors for the development of SUT in the PAR. These results match the research results obtained by Cottrell et al. [36], Shen and Cottrell [37], Khan et al. [40], Gong et al. [41], and Trišić et al. [49]. What distinguishes these results from the previous ones is the assessment of the economic dimension of sustainability as the dimension with the lowest value. This would mean that there is an absence of financial investments in the development of a sustainable destination and the existence of an underdeveloped local economy. Also, the novelty of these results points to the need to control the development of tourism by old institutions and stakeholders. This indicates the potential for uncontrolled development of infrastructure and facilities, which may have a negative impact on the environment. This indicates the importance of ecological principles in the PAR for the respondents, which should be a crucial principle of tourism planning and development. Nature protection must be correlated with tourism activities. All factors contributing to ecological sustainability should be improved to achieve benefits for the PAR, local people, visitors, and managers. The reserve without preserved nature cannot have an attractive effect for tourists [57–61]. The research results indicate that when developing local strategies and management documents, special attention must be paid to planning the role of institutions, as well as planning benefits for the local economy. Due to the importance of ecological principles and sociocultural factors, tourism planning must eliminate negative impacts on the nature of the reserve and strengthen the role of residents.

The relatively high value of sociocultural sustainability shows how important the local population's role is in the organization, growth, and management of tourism growth. Ethno-social values of PARs are an important tourist motive. In addition, creating an atmosphere in which a positive relationship between the local population and visitors comes to the fore is important for the sustainable progress of tourism [62–64]. The promotion of local culture is equally important for the local community and the PAR [65–77].

The respondents gave the institutional component of sustainability a comparatively lower rating (3.45 and 3.53 as mean values). The participants identified the absence of media and written announcements regarding the PAR's formation and population history. For tourists, several brochures and information materials must be available. This allows for the presentation and learning of all significant tourism values [69–71]. These methods of marketing can be used to teach tourists about the history, customs, and culture of the community, as well as the cultural and natural values of the PAR and its surroundings [78–80].

By analyzing the results obtained, it can be identified that the improvement of the state of SUT requires a significant development of institutional values. As a result, this can strengthen the interaction between residents and visitors [81–83], which can have a direct relationship with enhancing the sociocultural sustainability of the PAR [84]. The institutional dimension of sustainability can be improved by introducing nature schools and scientific and educational centers. In this way, opportunities would be created for visits by different target groups, wherein the local populace would play a unique role. The growth of tourism in PARs would also be encouraged by the establishment of a tourist center [85,86]. Also, zoning the space could directly limit destructive activities on the environment [69,70]. The encouragement of tourism and environmental preservation by the local population can be a strong point of sustainability. Active familiarization of visitors with laws regarding the preservation of nature can be an important endeavor for the local population and managers of the PAR [87,88]. The application for global status, as well as systems for protected areas, may benefit from this as a necessary precondition [89–91]. The respondents expressed the lowest average value regarding economic sustainability. These data may point to the fact that this PAR does not have a significant economic impact on the local population. For a certain number of respondents, the PAR does not affect the strengthening of the local economy and employment.

Different tourism-related activities may have varying environmental effects on the ecological and topographical features of PARs [92,93]. The unplanned construction of tourist facilities, which usually consists of accommodation facilities, tourist-educational centers, trails, roads, and others, can create various negative impacts on the PAR [94–97].

Based on the results, it can be considered that Cronbach's Alpha coefficients have extremely high values, as indicated by the value $\alpha > 0.7$ for all dimensions. The values of the institutional dimension of living tourism α are 0.789 for residents and 0.811 for visitors. The α values for the environmental dimension are 0.809 for residents and 0.781 for visitors. The α values for the economic dimension are 0.804 for residents and 0.859 for visitors. The α values for the sociocultural dimension are 0.811 for residents and 0.869 for visitors. Analyzing the values of α for the respondents' satisfaction with SUT, it can be concluded that the values of $\alpha > 0.70$. According to Nunnally and Bernstein [52] and Cortina [53], all values $\alpha > 0.60$ are frequently acknowledged as trustworthy in studies. All the coefficients indicate a high degree of dependability and internal consistency of the scales, according to the study of the acquired values ($\alpha > 0.70$), meaning that all the data obtained through the survey can be considered extremely reliable for analysis and further investigation.

It can be inferred that the variables significantly affect SUT in the nature reserve if the mean values of each dimension are examined regarding both responder groups. With this, the auxiliary hypothesis H2 is fully confirmed. Such results coincide with the findings of Cottrell et al. [38], Shen and Cottrell [37], Khan et al. [40], and Gong et al. [41].

Analyzing respondents' satisfaction with SUT, relatively high values (from 2.29 to 4.11) can be identified. The total average values of satisfaction with SUT are 3.65 and 3.39. The interviewees highlighted the significance of growing tourism in PARs. Also, the respondents pointed out that tourism brings various benefits and affects the attractiveness of the destination.

Following data analysis, it can be concluded that there is a comparatively elevated degree of satisfaction among the respondents with the claims related to SUT despite the lower individual values of the sustainability dimensions. If the values obtained by multiple linear regression are analyzed, it may be said that there is a close connection between independent and dependent variables ($0.009 > p > 0.054$; $0.001 > p > 0.111$). This would mean that all four dimensions exert a significant influence on the respondents. Concluding considerations

provide the complete confirmation of the primary hypothesis H1. This means that the SUT of the Karadjordjevo has a major effect on inhabitants' and tourists' satisfaction.

From a sustainable development standpoint, one of the goals of the reserve's management should be to keep it within the estimated tourism and recreational capacity threshold of a protected forest area. This is the land manager's most crucial responsibility. The recreational potential ratio could be a helpful management tool in park administration since it allows national parks' statutory social and protective duties to be reconciled. From the perspective of protecting natural resources, the recreational potential ratio can be used in forests that are particularly vulnerable to recreational damage [2].

This study's findings are the same as those of Spangenberg [34], Cottrell and Cutumisu [35], Cottrell et al. [38], Shen and Cottrell [37], Cottrell et al. [36], Asmelash and Kumar [39], Khan et al. [40], Gong et al. [41], and Lata et al. [82]. This indicates that the SUT of various PARs as tourism destinations can be investigated using this research paradigm.

According to Štetić et al. [1], it is crucial to identify a variety of elements that may influence the growth of tourism when analyzing the sustainable tourism of protected areas. These authors contend that it is critical to consider every aspect to classify them into sustainability dimensions. Each dimension can be an indicator for necessary interventions to improve the location's both social and ecological potential.

The SUT in the PARs should integrate five basic components: environment, social integrity, cultural heritage, tourist satisfaction, and economic profit. In addition to the basic goals, the special goals of SUT imply that in addition to the primary subjects in tourism development, sustainable planning and control of development should also include wider stakeholders, who, in addition to direct benefits, also have indirect benefits [4–6,9].

In the process of SUT development of PARs, it is necessary to include important stakeholders, such as government bodies and institutions, the local population, business representatives, managers, and visitors, to identify the primary and common goals of SUT development [6–10]. It is possible to present a genuine, up-to-date image of protected areas' positions in development plans by comparing their differences in growth. During that time, it is critical to determine the reasons behind progress stagnation, which might include a variety of factors. Among other considerations, the area's periphery in relation to the major centers plays a significant influence on tourist destinations. Furthermore, the issue occurs when activities that are counterproductive to the protected area's development are concentrated in one region. The first reason is that there is no success in bringing in new visitors who wish to avoid places where natural resources are not protected. Another major issue is the socio-economic infrastructure of the regional environment, which is represented in the conditions for developing innovation processes, the creation of new products, the engagement of the local populace, etc.

What distinguishes this study from prior research is the selection of the sample and respondents. The study focuses on collecting the perceived views of residents and visitors on factors that can influence the development of travel that is sustainable. Additionally, the innovation of this study lies in the fact that the group of residents also consists of stakeholders who have direct insight into the management system of protection and tourism development planning. A significantly larger number of respondents also set this study apart from earlier ones, which is why the research results have greater scientific value [16].

This is related to national preferences, which are often linked to political factors. Therefore, we must view the policy of the development of protected natural resources through the broad prism of the overall development of the country, region, and local community. The function of their joint participation in the preservation and development of protected resources must be included in the development strategy.

The function of protected areas in the development of tourism can also be seen through policy implications. Creating such destinations can have an immediate impact on local employment. Representatives of the community must actively participate in management, which is directly related to how these locations are included in the travel proposal. In addition, the growth of tourism in protected areas can influence the development of other local products and crafts, which is considered a direct tourism impact [14,15].

The outcomes of the study are essential for the creation of strategy documents relevant to the planning of the growth of tourism in PARs. Such tourism needs to have a defined role for locals and concentrate on nature. When it comes to other pursuits, protecting nature must come first. Many nature and forest ecosystem researchers can profit from the study's results. These findings can be used to construct educational programs about the interaction between people and the environment, the contribution of the local populace to the growth of travel, and visitor behavior in PARs.

The research's limitations were connected to the respondents' ability to correctly answer statements that cited data regarding the situation of sustainable tourism in the study area. For this to be largely mitigated, the respondents were provided with additional explanations during the survey, that is, while filling out the questionnaire. The electronic and written questionnaires contained detailed instructions for completing them. Another significant problem was that sustainable tourism in this reserve was examined by a small number of researchers. This prevented a comparative study with results that had already been published. Future studies will assess the degree of sustainable tourist development in different forest-protected areas in the region while continuing with research into the role that protected areas may possess in tourism's sustainable growth. Once the necessary information has been collected and certain results obtained, a comparative analysis can be carried out, with the help of which it is planned to reach broader results regarding the conditions and potential for creating environmentally friendly travel in protected regions. The authors will include in their future research collecting information from visitors to protected areas to gather data on the motives for their visits to these destinations. To provide a distinctive tourism offer, the research will be planned to consider all potential aspects of sustainable tourism and make proposals.

5. Conclusions

Studying the importance of the ecosystem in tourism for the perception of visitors and residents regarding SUT in Karadjordjevo, important results were obtained regarding the function of the forest ecosystem in the use of space. This time, it is considered the fact that Serbia boasts 2.3 million hectares of woods, habitat to a diverse range of species that interact with their environment's chemical and physical characteristics, including plants, microorganisms, and animals. Based on an analysis of the natural condition, it was determined that Karadjordjevo is distinguished by a high degree of species, genetic, and ecological diversity. Because of the diversity of geography, geology, biogeography, hydrology, pedology, and climate, different ecological conditions have emerged. This made it possible for many species and their habitats to exist and thrive in this region. In addition, various orographic and climatic conditions cause their diverse and complex vegetation.

By investigating the impressions and opinions of visitors and residents in this study, the authors had a desire for tourists and residents to expand their knowledge about the importance of learning about and preserving forest ecosystems and protected areas. In direct contact with the respondents, new outputs for further research were obtained. The perception of some respondents was directed, not only towards protection and sustainable development but also towards understanding the overall atmosphere in this destination. Some respondents spoke about the sounds and sound effects of noise, emphasizing their

importance for the therapeutic effect on the body. In this way, they opened the field of new research into protected areas and their effects on the human body.

Therefore, the authors in this paper underline that coordinated development in these areas should also be seen as the emergence of changes that are established between social, economic, and natural systems and processes. Exceptionally recreational and touristic features of such areas are the landscape, aesthetic, and decorative environment.

Visitors who completed the survey questionnaires in the field made the following observations:

- Providing the infrastructure required for easier access to the destination;
- Providing the locality's spatial contents and equipment;
- Creating the conditions for an undisturbed stay in nature and the implementation of new types of tourism through the upgrading of the tourist range.

During field research, the authors spoke with local community representatives and found the following:

- The need of the local community for increased allocation of funds for equipping tourist sites;
- Greater financial support from the state for the planning and preservation of these areas;
- Further local participation through the business connections of all entities in the area;
- Empowerment of the management team.

According to the study's results, sustainability factors are significant for the condition of tourism in the area under observation. Each dimension identifies areas that require further monitoring if favorable outcomes are anticipated. The study additionally proved that the satisfaction of the location's direct users is much increased by sustainable tourism. Respondents' satisfaction is dependent on the state of sustainable tourism. Ecological and sociocultural sustainability were evaluated by the visitors as the most significant dimensions of sustainability, that is, the dimensions that contribute the most to sustainable tourism. This would imply that social and cultural factors and ecological aspects are the most significant in this location. This information can be used when planning and developing specific forms of tourism, such as educational tourism, ecotourism, adventure tourism, rural tourism, health, sports, events, and cultural, i.e., forms of tourism based on natural and sociocultural resources.

The outcomes of this study may have implications for tourism planning. The contribution of SUT to the satisfaction of respondents can be a significant data point when including the forest reserve in the tourism offer. The main goals for management ought to be founded on an evaluation of these advantages, limitations, and opportunities for expansion in the creation of sustainable tourism. Certain pillars for the growth of environmentally conscious and nature-based tourism can be found by examining the outcomes of hypothesis testing. In addition, cultural tourism could increase the tourism offer's worth even further. It is crucial to note that the surrounding area is very important, and it is essential for carrying out planning activities. The growth of tourists within this protected region must have a primary goal, which is the protection and enhancement of basic natural values. Considering research findings, environmental and social-cultural elements are important for the protected area and respondents. It is necessary to organize the growth of particular types of tourism, such as green tourism, breaks and observing birds, educational tourism, recreational tourism, cultural tourism, and events. The role of residents is particularly important, so their active participation in the development of tourism, promotion of values, and control of the impact of tourism is significant.

Future research on environmentally friendly travel in protected zones is scheduled to examine both tourists and the permanent population. Important objectives will be set

for the researchers. They will be reflected in the study of the possibilities of protection of natural and cultural heritage and ecosystems, and the management of biodiversity. Special attention will be paid to the importance and improvement of architectural values in cultural heritage, strengthening traditions, customs, and events within the destination, the possibility of employment for the local population, the development of small local businesses, and other possibilities.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/f16060909/s1>, The Questionnaire: Karadjordjevo.

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