Original Scientific Paper

UDC: 338.48-53:502/504
338.484:502.131.1
doi: 10.5937/menhottur1802043S

The role and importance of ecosystems in creating tourism activities

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Abstract: Tourism and forms that are manifested in a specific area are subjected to intensive scientific-professional analysis of different goals and tasks. In addition to monitoring the volume of tourism flow, it is also important to analyze the effects on ecosystem values within destinations. Such effects are mainly manifested on environmental elements such as air and water, but they are nothing less manifested on coastal areas, urban and mountain areas. All these effects are analyzed in this paper. Attractive tourism areas are also valuable biocoenosis which is inhabited with endemic plant and animal species. Besides that, those are the areas with fragile ecosystems, swamps, areas important for the protection of biodiversity, where ecological niche and valence are the priority in environment protection systems.

Keywords: tourism, ecosystem, tourism and area protection
JEL classification: Z32, Q56, Q57

Uloga i značaj ekosistema u kreiranju turističkih aktivnosti

Sažetak: Turizam i oblici koji se manifestuju u određenom prostoru, predmet su intenzivnih naučno-stručnih analiza različitih ciljeva i zadataka. Pored praćenja obima turističkog prometa, važno je analizirati i uticaje na ekosistemske vrednosti unutar destinacija. Ovakvi uticaji uglavnom se ispoljavaju na elemente životne sredine, kao što su vazduh i vode, ali nisu manji ni uticaji na priobalna područja, gradsko i planinsko okruženje. Takvi uticaji upravo su analizirani u ovom radu. Atraktivna turistička područja ujedno su vredne biocenoze, u kojima su naseljene endemične biljne i životinjske vrste. Inače, to su područja sa osetljivim ekosistemom, močvarni tereni, prostori važni za zaštitu geodiverziteta, gde su ekološka niša i valenca prioritetni u sistemima zaštite prostora.

Ključne reči: turizam, ekosistem, turizam i zaštita prostora
JEL klasifikacija: Z32, Q56, Q57

1. Introduction

The use of resources in tourism is very often overlapping with the ecosystemic values of nature, where changes in the elements of nature and still life lead to numerous consequences

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to nature. The problems of degradation and the pollution of ecosystems are, globally, all the more present and dangerous for the survival of many species, even for the entire life on the planet. Geological forms, hydrographic forms, rare flora and fauna, natural phenomena and the characteristics of specific areas represent an interest for billions of people that are involved in tourism. That can often result in negative relations between nature on one side, and tourism on the other. Some resources are non-renewable and remain permanently degraded, as is the case with land exploitation, coastal erosion, the devastation of flora on mountain terrains, etc. (Belsoy & Korir, 2012). Such modified ecosystems continue to develop other devastating domino effects. On the other hand, air, water, and land have been greatly modified by civilization. Humanity is a witness to the daily decrease in plant and animal species. A large number of them gained the IUCN status of extinct species (EX) for a long time already.[1] This paper will analyze the way in which the ecosystem and its elements influence the creation of certain tourism activities within protected areas as tourism destinations. Whether tourism plays a role in protecting and promoting the values of an ecosystem or not, represents a basic hypothesis of the paper.

2. Background

The loss of individual species in ecosystems and food chains disturbs a complete natural balance. Various global organizations are making great efforts in preventing the consequences of environmental degradation (Danilović & Lazić, 2018). Through protection initiatives and activities in protected areas, tourism has a significant role in preserving the value of ecosystems and often gets the epithet of the ′savior′ of the planet. Eco and wildlife travels are being increasingly initiated, in order to improve and promote the preservation of nature and its unique ecosystems (Štetić & Šimičević, 2015). Various forms of tourism that are not in contradiction with sustainable development can be developed in protected areas (Manente et al., 2014). The types of tourism that are most often conducted in these areas are related to the following concepts: sustainable tourism, ecotourism, green tourism, and the like (Vujović et al., 2012; Štetić et al., 2014). Sustainable use of natural resources implies an analysis of the basic components of sustainable development, such as environmental, economic and social component (Milićević et al., 2013; Carr et al., 2016). Lately, when it comes to the use of biodiversity (Fennell, 2015), the so-called ecosystem services are being increasingly emphasized (Holden, 2016), whereby attempts are made in order to valorize all possible values of specific ecosystems and natural habitats (Kostić & Petrović, 2013; Delić et al., 2017). The forms of tourism directed towards the elements of ecosystem, such as flora and fauna, are often formed (Hall et al., 2015). There is a lot of interest in them and they represent significant travel motives. In addition to the safari tourism within destinations, there are numerous forms of direct habitations with animals. Often such activities have an impact on changes in animal behavior which can be negatively reflected in their future life in natural environment. The tourism activities from previous research (Chen et al., 2016) are shown in Table 1.

Humanity is increasingly turning to the conservation of natural values. World ecosystem conservation practices refer to the restriction of tourist activities within protected areas (Ali & Frew, 2013). Proper monitoring contributes to the sustainability of all elements of the environment (Malek et al., 2018). Both direct and indirect benefits are gained by such a destination to all entities within the border and zone of the area. Table 2 (Higginbottom, 2004) provides the most significant factors of this system and their role in the models as well as the reasons of ecosystem protection within the area of a tourist destination.

[1] IUCN Red List to the end of 2017 has 91,520 estimated endangered species, and the aim is to cover at least 160,000 species by 2020 (IUCN, 2017).

Table 1: List of tourist activities involving animals

Type of tourist activities	Programs of tourist activities	Main animals used	Example
Entertainment	Circus performance	Horses, monkeys, bears, dogs, pandas, elephants, lions and tigers	Circus in the world
	Routine performance	Elephants, seals, dolphins, crocodiles and snakes	Hong Kong Ocean Park, Thailand Crocodile Park
	Horse racing	Horses	Countries all over the world
Sport	Playing polo and elephant ball	Horses and elephants	Europe and South-east Asia
	Bull fight and ram fight	Bulls and rams	Spain and China
	Hurting	Rabbits, deer, jackals, boars, birds, etc.	All countries
Appreciation, relaxation and fun	Animals for appreciation	Gold fish, tropic fish and small birds	China, Europe and America
	Fishing	Fish	Countries all over the world
	Fun of fighting	Cocks, crickets and golden dogs	China, European and Asian countries
	Listening to bird's singing	Parrots, starlings and orioluses	China and Japan

Source: Chen et al., 2016

Table 2: Primary goals of major wildlife tourism stakeholders

Stakeholder	Expected primary goals
Visitors	– Access to affordable, high quality wildlife tourism experiences
Tourism industry, including private and public sector operators, the travel trade and industry associations	– Growth of wildlife tourism – Maximise short-term profits to individual operators and members of travel trade
Government agencies concerned with tourism planning and promotion	– Economically, socially and ecologically sustainable growth of wildlife tourism – High quality operators and experiences
Host communities	– Maximise profits to local area – Minimise negative social consequences of tourism – Minimise disruption of local uses of wildlife
Environmental managers, particularly government conservation agencies	– Ecological sustainability of tourism activities – Satisfy public recreation goals – Use tourism to support conservation goals
Non-government organisations concerned with animal welfare and conservation	– Minimise threats to wildlife conservation and/or welfare – Use tourism to support conservation goals
Wildlife	– Generally it is assumed that their interests are reflected among the goals of – the latter two stakeholder groups

Source: Higginbottom, 2004

When analyzing the relations among the subjects of ecosystem protection, the expenses and losses imposed by tourism, along with the protection of ecosystems must be taken into account. Such potential benefits and costs from previous research can be seen in Table 3.

Table 3: Costs and benefits of tourism to national parks

Benefits	Costs
Designated protected areas for the conservation of nature, wildlife and eco-system services	Unless carefully managed, tourism and recreation can pose both a threat to landscape and wildlife that the park was established to protect
Provides a place for people to experience nature. Tourists can also provide revenues for park management, scientific research and conservation projects. It may also provide an economic rationalefor conservation	Granting of national park status focuses attention on the area. This may lead to the attraction of too many tourists and overcrowding of the area. The use of pricing mechanisms and entrance fees may discriminate against the less economically rich
Offers capacity building and employment opportunities for local people in conservation and tourism activities	Indigenous peoples can be excluded from their territory with a detrimental effect on their livelihood opportunities and security

Source: Holden, 2013

3. Materials and methods

The methodology of this paper includes the analysis of various written data concerning the effects of tourism relationship with the ecosystem, that is, the basic elements of the environment. The current status of ecosystem values in some tourism destinations will be attempted by synthesizing and displaying the collected data. The analysis of data in the paper can serve as a good model for defining the role and significance of ecosystems in creating tourism activities and will be compared with the results obtained by the author's survey regarding the opinions of tourists towards ecosystems within protected natural areas of Serbia. This can be of importance for making conclusions regarding the role of ecosystems in creating tourism activities within specific destinations. Protected areas represent certain spaces and very attractive destinations in which many activities that can change the area and affect natural processes and the entire ecosystem are restricted (Milićević & Štetić, 2017). The concept of area protection in the world allows the use of resources, but exclusively in a sustainable way, based on renewal. That additionally increases the tourism significance of specific destinations. As the final results of the area protection effect on the quality and type of destination, there is ecological, economic, and socio-cultural profit that can be distinguished for all participants of this unique system (Hoang et al., 2018). The data can be compared to the results provided by the author's conducted research.

During April and May 2018, the author conducted a survey on travel to the protected areas of the Republic of Serbia. The survey was conducted among 215 potential travelers, coming from eight cities in Serbia - Smederevo, Belgrade, Kovin, Novi Sad, Pirot, Indjija, Niš and Pančevo.

In addition to the written questionnaire, they were asked to provide answers to 3 questions regarding sustainable tourism development and its role in determining tourist activities within protected areas, as well as their opinions about specific ecosystems. The respondents gave answers within a written questionnaire in protected natural areas or other travels. The examiners were tourism workers and teachers. There were multiple-choice answers, i.e. more than one correct answer could be circled or checked. There was no ranking of responses.

4. Results and discussion

Before the data analysis, it is important to show the structure of the respondents.

Parameters of importance to data analysis and research are gender of respondents, education and age structure. The structure of the respondents is shown in Table 4.

Table 4: Structure of respondents

gender	**frequency**	**percent**	
male	102	47.4	
female	113	52.6	
Total	**215**	**100.0%**	
education	**frequency**	**percent**	
primary education	27	12.6	
secondary education	94	43.7	
higher education	22	10.2	
high education	72	33.5	
Total	**215**	**100%**	
age structure	**N**	**min**	**max**
	215	18	73
	mean	**std. dev.**	
	36.85	15.228	

Source: Authors

Within the research, respondents were asked a question regarding the reasons for the protection of ecosystems in the territory of Serbia (Table 5).

Table 5: Answers of respondents regarding the reasons for the protection of ecosystems of Serbia

Do you think that ecosystems of Serbia should be protected because of:	**Responses**		**Percent of Cases**
	N	**Percent**	
Pollution	166	30.8%	77.2%
Endangered plants and animals as basic components of the ecosystem	151	28.0%	70.2%
Tourism reasons	103	19.1%	47.9%
Significant and rare ecosystems	60	11.1%	27.9%
Unplanned construction	56	10.4%	26.0%
It is sufficiently protected, protection should not be improved	3	0.6%	1.4%
Total	**539**	**100.0%**	**250.7%**

Source: Authors

The largest number of respondents (30.8%) said that the pollution was the main reason for the protection of ecosystems, and (28.0%) of them said it was endangered plants and animals. This is followed by tourism reasons, value, and rarity of ecosystems and illegal

construction. Only 3 respondents (0.6%) believe that no further improvement of the protection of ecosystems is required.

Due to tourism exploitation of the area, damage to weaker representatives of the ecosystem, such as plants and animals, can be caused. The polar area is perhaps the easiest to recognize as such areas, with the harsh climate, a high degree of endemism of flora and fauna and an extremely fragile environment (Stonehouse & Snyder, 2010). However, such rare ecosystem destinations have recorded a dramatic increase in tourist visits over the last decades. The participants of the adventurous forms of tourism are growing an interest for the Arctic region. Polar bear (*Ursus maritimus*) attacks are often recorded there. On the Norwegian island of Svalbard, only four attacks of polar bears were recorded in the seventies, and, in the following years that number increased up to 12 per year. Naturally, people kill more of these animals each year, primarily due to close encounters (Cater, 2013). Such conflicts can become increasingly frequent because the territories with extreme conditions (deserts, oceans, polar ice caps) largely represent the motive of adventurous travels. The results of the research cited (Navareen et al., 2001), documented the docking of 425 speedboats to 165 locations in Antarctica, only in the period from 1989 to 1999. In the period from 2000 to 2007, there was a triple increase in the number of passengers of large passenger ships to Antarctica, which in the summer seasons of 2008 and 2009 was approximately 40,000. There are about 20 different companies that offer such cruises in the world, and some of their ships can transport from 1,000 to 3,000 passengers (Mercer, 2013). Ecosystems are threatened directly by the construction of infrastructure, both for the needs of the domicile population and for the needs of tourists (Wood, 2017). The existence of this degradation cause is confirmed by the answers of respondents in the author's conducted questionnaire. 10.4% of respondents noted that illegal construction negatively affects the ecosystem.

Tourism also has a very significant effect on seaside destinations. In an overall study carried out by the German Federal Nature Conservation Agency and the World Nature Protection Society (Fennell, 2015; Holden, 2016), among the most important coastal areas for tourism development on the global level there are: The Mediterranean, the Caribbean, the Gulf of Mexico, the Indian Ocean Island, Australasia, and the Pacific Islands. The most negative effects of tourism and recreation are the categories of sandy beaches and coastal dunes. The big problem is a constant increase in the tourist traffic of these areas, as indicated by the fact that 100 million tourists visit the coastal areas of Europe each year, and it is predicted that that number will reach 230 million by the year of 2030 (Trišić, 2012). The pollution of aquatic ecosystems increases which directly involves tourism destinations as well. Such examples are recorded in Acapulco Center with the beach of the same name in southern Mexico. This was once a tourist destination with clear water and green environment for holidays, summer vacation and swimming. However, this beach has been turned into a waste dump, because it suffered the worst pollution. The authors Chen, Lu & Ng, 2016 note the results of the research that show that the daily waste that went into the bay through various channels included 300,000 m^3 of wastewater, 440,000 tons of solid waste, 170 tons of phosphate salt, 5 tons of detergent and 500 tons of industrial oil. These agents that were found in sea salt, led to the infection of many tourists, typhoid diseases, intestinal diseases, skin diseases, etc. According to statistics, approximately 20% of tourist are infected by bacteria and viruses in this water every year (Chen, et al., 2016). Water pollution is a big problem in many tourist areas in the world. For example, in the most visited tourist area, the Mediterranean, only 30% of more than 700 coastal cities processes the sewage before it is dropped into the sea (Štetić & Trišić, 2018). Another important ecosystem in the world is offshore and inland wetlands that cover about 6% of the world's surface. Wetlands not only possess a wide spectrum of biodiversity and act as storage sites for huge amounts of carbon, but they also function as a form of local flood control absorbing huge amounts of water

during heavy precipitation and subsequently discharging it in neighboring areas in a slow and moderate manner. The example of Languedoc-Roussillon in the southern France (Buckley, 2012), where 5 coastal areas have been developed on wetlands in response to the lack of available land for construction of the French Riviera shows that wetlands are increasingly involved in tourism. One of the ′new′ seaside areas, La Grande-Motte, has become the third largest French resort in the Mediterranean after Cannes and Nice (Trišić & Kostić, 2018).

The given data can be compared with the results of the research conducted by the author. In the questionnaire, respondents were also asked about the activities related to the protection of ecosystems in the territory of Serbia (Table 6).

Table 6: Responses of the respondents regarding the activities related to the protection of ecosystems of Serbia

By which means would you support the sustainability and protection of ecosystems of Serbia:	Responses		Percent of Cases
	N	Percent	
Ethical codes for tourists	82	20.8%	38.1%
Conscientious ecological behavior	133	33.7%	61.9%
Applying tourist activities in order to support the ecosystem	174	44.1%	80.9%
Some other activities	6	1.5%	2.8%
Total	**395**	**100.0%**	**183.7%**

Source: Authors

The largest number of respondents (44.1%) stated that it is necessary to apply tourist activities based on the protection of the ecosystem and conscientious ecological behavior of the individual (33.7%). The following answers are based on the importance and significance of ethical codes (20.8%). Only 6 respondents (1.5%) suggests some other activities in order to support the sustainability of the ecosystem.

Many examples in world practice show that tourism has become an ′ecosystem savior′. For example, in a large part of Madagascar (Southgate & Sharpley, 2015), there is numerous damage to nature due to the population growth and its dependence on natural resources. Up to 85% of the forest has been cut down for production of coal and for making space for cultivation and livestock production which resulted in a significant increase in soil erosion rates. According to The Economist's quoted report (Mieczkowski, 1995), it is estimated that the price of the deforestation in this area costs between 100 and US$300 million a year. However, tourism has provided the extension of these ecosystems lifespan. In particular, ′tourism towards nature′ has become the main source of income for the Government of Madagascar due to the international interest for this unique ecosystem. The species like Hairy-eared dwarf lemur (*Allocebus trichotis*) have arisen significant interest among growing number of ′nature tourists', and since 1991, the remaining forests that provide protection for this and other lemur species have also been protected. At the same time, the Ranomafana National Park was also founded. Here, a USAID project was implemented in order to train the local population as tourist guides and to provide other people with basic skills that are needed to develop local tourism and catering industry. Half of the value from the collected tickets contributes to the sustainability of this project (Southgate & Sharpley, 2015). Nine of the world's 25 biodiversity hotspots for conservation priorities are mostly or completely made up of islands. Isolation is often considered a benefit for tourism as far as it tends to make the destination more attractive, exotic, and enticing, especially in the case of small islands where tourism is of vital importance for the economies, but islands are fragile environments due to isolation and can suffer easily degradation in their ecosystems (Queiroz,

Guerreiro & Ventura, 2014). A good example of the protection of ecosystems through tourism is recorded on the island of Fiji. With the surface of 6.5 km^2 only, the Sigatoka Sand Dunes National Park was established there in 1989 for the protection of the archeological sites of ancient tools from the prehistoric period. The park is managed by the National Fund of Fiji, and that is the first national park in the country. Within the park, there are numerous endemic coastal flora and 22 species of birds, eight of which are extremely rare. These include the Fiji bush warbler or the shrub (*Horornis ruficapilla*), the Fiji goshawk (*Accipiter rufitorques*) and the Orange-breasted Myzomela (*Myzomela jugularis*). The National Fund of Fiji supports the protection of this park by charging the tickets in the amount of US$5 per person. There are numerous system services in the park such as walking paths and the visitor center. Park tours also promote local resorts around the park itself (Morrison & Buckley, 2010). The following data stated by Southgate & Sharpley, 2015, testify in support of the existence of the positive relationship between the ecosystem and tourism: Galapagos, with the epithet of ′magical islands′, offers various advantages that can be achieved by tourism. It is about 966 km from the coast of Ecuador, and as a volcanic island, it is considered to be one of the most fragile ecosystems in the world. It is significant that 95% of reptiles, 42% of plants, between 70% and 80% of insects and 17% of fish found in Galapagos do not exist in any other area in the world. Gaining the status of a National park for 97% of the island has, without doubt, enabled the sustaining of the ecosystem, although the government of Ecuador faced strong opposition from other interest groups regarding the use of the area. Only with the help of different regulations, and considering the needs and requirements of the local population, as well as other interest groups from the island, were the positive steps made in order to preserve one of the most intact enclaves of nature on the planet. The efforts of the National Park of Ecuador service - Instituto Ecuatoriano Forestal y de Areas Naturales y Vida Silvestre: INEFAN made the tourism on Galapagos popular. The revenue gained from tourism was significantly increased. For example, the tickets were US$100 for foreigners which made 5 million dollars return directly to the Galapagos National Park. That has built a strong relationship between the tourism industry and the environment (Southgate & Sharpley, 2015).

Monitoring and evaluation of the effects of tourism can provide concrete evidence of successes or failures in managing protected areas and with that, they help to identify necessary system management changes, including precaution to serious problems (Liburd & Becken, 2017). In addition to identifying multiple unpredictable effects on the environment, this can also help managers to create the protection and hypotheses as to how they should face such changes (Mulongoy & Chape, 2004). In support to this, the authors Eagles-Paul, McCool and Haynes, 2002 present the benefits of tourism development in specific protected areas through a case study: more than 60,000 tourists visited the Chitwan National Park in Nepal in 1994. Nevertheless, household income was minimal and limited only to the villages closest to the park. The study has shown that out of the estimated 87,000 working-age people living near the park, only 6% of surveyed households earn directly or indirectly from this form of tourism. In fact, the average annual income of these households was only US$600. Therefore, it is important to develop an understanding of the levels of economic benefits. Tourism managers should not create unrealistic expectations in terms of economic benefit levels and the protection of specific areas (Eagles-Paul et al., 2002).

Numerous benefits and potential costs in relation to the protection of ecosystems and defining tourism activities within specific areas are presented in the paper. Developing the awareness and needs of tourists in terms of ecosystem development influences the choice of destinations and the form of tourism activities. The results of the author's questionnaire, that can confirm the basic hypothesis of this paper, are in support of this contention. As a part of

the conducted questionnaire, the respondents were also asked to provide an answer regarding the choice of future travel that is based on certain ecosystem protection activities (Table 7).

Table 7: Response of respondents regarding the choice of a future travel

The choice of a future travel destination will be related to the following tourism activities:	**Responses**		**Percent of Cases**
	N	**Percent**	
Visit certain destinations but without restricted tourist activities	17	7.3%	7.9%
It will not include visits to rare and fragile ecosystem sites	5	2.2%	2.3%
Visit protected areas of nature with valuable and pristine ecosystems, in which only specific activities regarding nature sustainment are allowed	210	90.5%	97.7%
Total	**232**	**100.0%**	**107.9%**

Source: Authors

A total of 215 respondents had the possibility of circling one or more responses regarding the question above. 210 respondents chose answer 3, 17 of them chose answer 1, while the answer 2 was chosen 5 times. The largest number of responses (90.5%) circled answer under 3, from which it can be concluded that the respondents expressed their will to select a destination with restricted activities because of nature and ecosystems protection.

5. Conclusion

Overloading is perhaps one of the biggest hidden perils for the ecosystem which is preserved by protected areas, and by proclaiming a national park status or any other kind of protection mechanism, it automatically becomes an attractive place to visit. The question arises as to what extent was the visiting of protected areas actually involved in the preservation of ecosystems and other natural values of protected areas. The concept of protection in most of these areas in the world allows the use of natural resources, but only in a sustainable manner, with the basics of renewal. Ecological, economic, and socio-cultural benefits for all members of this system can be distinguished as final results of the protection. Tourism effects of ecosystems in the world are subjects of many protection studies, as well as spatial plans and conservation projects. Sustainable development of tourism has a role to level out the gaps and problems within this circular system. The intensive use of environmental resources leads to global consequences, many of which are extensively spreading all over the planet and claiming their victims. Fires, droughts, the rise of seas globally, climate changes, the melting of polar caps, an increase in average air temperature, and many other changes are the results of man's unconscionable relation towards ecosystem values. Since these values are disappearing gradually there is a need for protection and preservation, whether it is spatial units, natural phenomena or the representatives of flora and fauna. Today, there are more than 217,155 protected areas (destinations) in 244 countries, 202,467 of which being terrestrial and 14,688 marine protected areas. A large number of rare plant and animal species are preserved under this protection and they are not compromised. It is already too late for man's reaction to a certain number of environmental changes. Other consequences can be put to the minimum with proper and quick interventions, or they can be completely eliminated because it can be concluded that tourism not only has no negative effects on the ecosystem but can improve all its values according to data analysis in the paper. Today, ecological crises are increasingly common. Shrinking ozone layer, climate changes, erosion, pollution of water, air and soil, and biodiversity loss are consequences of man's

irresponsibility towards nature. Resources are spent and their ability to renew is far less than it is required. The existing imbalance between nature and the needs of society required establishing a specific regime of behavior and functioning which could result in longterm responsible and optimal development. According to data analysis and the results of the conducted questionnaire, it can be concluded that the ecosystem greatly defines tourism activities during tourist visits. Moreover, the responses regarding choices of tourism activities within the visits of the protected areas in the Republic of Serbia point to the awareness and will for improvement and protection of ecosystem values. Also, almost all respondents recognized the crucial reasons for protecting the ecosystems. By analyzing the data from the world practice and the obtained results of the conducted survey, it can be concluded that the role and importance of ecosystems are significantly present in the creation of tourism activities. The limitations of the research were obsolete data. Other research will show the outcome of these models in terms of preventing negative impacts of tourism on the environmental system protection, and whether this protection is going to be sufficiently implemented, controlled and monitored.

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Received: 18 November 2018; Sent for revision: 27 November 2018;
Accepted: 29 November 2018