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AN INTEGRAL-GEOGRAPHIC MODEL FOR TOURISM POTENTIAL ASSESSMENT

Abstract. Potential estimation is one of the most fundamental areas of all tourism studies, and it is critical for emerging markets especially when it comes to the planning and organizing of tourism development and functioning destination management organizations. There exist many potential estimation methods, and no single one is superior to the other. For our research however, we choose the assessment model based on the experiences of other researchers adopting the same, and the suitability and uniqueness of our geographical region of study, which is Armenia. Tourism potential assessment will help Armenian tourism organizations avoid general tourism misleads. This research focuses on one of Armenia's ten regions, the results will be used to model similar expected results for the other nine regions. The chosen model will scrutinize the chosen region for all tourism potential. The author evaluates 572 main tourist attractions in the Syunik region of south Armenia. by the tourism attractiveness, the geographical locations and inherent value. The results of these assessments made it possible to draw conclusions about reasons for spatial inequalities among tourism attractions and possibilities of tourism potential to affect them. The author gives recommendation to create center for tourism based on ecological reasons and the nature of the region's mountain valleys.

Keywords: tourism, potential estimation, attractiveness, Armenia, Syunik marz

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ИНТЕГРАЛЬНО-ГЕОГРАФИЧЕСКАЯ МОДЕЛЬ ОЦЕНКИ ТУРИСТИЧЕСКОГО ПОТЕНЦИАЛА

Оценка потенциала – одна из наиболее фундаментальных областей всех исследований в области туризма. Она имеет решающее значение для развивающихся рынков, особенно когда речь идет о планировании и организации развития туризма и действий организаций по управлению дестинациями. Существует множество методов оценки потенциала, и ни один из них не является единственным. Для данного исследования мы выбираем модель оценки, основанную на опыте других исследователей, также учитывая уникальности нашего географического региона исследования, которым является Армения. Оценка туристического потенциала поможет армянским туристическим организациям избежать общих туристических заблуждений. Это исследование сосредоточено на одном из десяти регионов Армении, результаты будут использованы для моделирования аналогичных ожидаемых результатов для других девяти регионов. Выбранная модель тщательно исследует регион на предмет всего туристического потенциала. В первой части исследованы 572 основных туристических объекта в Сюникской области на юге Армении. Далее проведена оценка туристической привлекательности этих достопримечательностей. В последней части дана оценка географического положения. Результаты этих оценок позволили исследователям сделать выводы о том, почему существует пространственное неравенство между туристическими объектами, и влияет ли оно и как влияет на туристический потенциал. Наконец, было рекомендовано создание туристского центра в регионе, исходя из экологических соображений и характера горных долин.

Ключевые слова: *туризм, оценка потенциала, привлекательность, Армения, Сюникский марз*

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Introduction

Problem statement. There is a vast amount of research conducted on assessing the touristic potential of any given territory and many assessment methods used, but as such no particular method has been generally accepted as the best. This is because of the diversity of tourist attractions and resources and by the various of types of tourism as well.

Despite attempts to use different methods, the issue of assessing touristic potential remains problematic; the main problem is the lack of a commonly accepted method for calculating touristic potential. Potential estimation is vital for tourism planning and developing in any given region because it makes it possible to compare one region to the next. We believe that the problem of not having one single method to determine touristic potential can be solved by using integral methods which take into consideration many factors (including natural factors). An integral evaluation approach of the tourist potential will be more productive and reliable if different estimation methods are used in the process of evaluation based on a particular type of territory. This approach is advantageous since researchers avoid subjectivity when assessing the touristic potential.

Potential assessment was chosen after careful evaluation of voluminous past studies, and also a geographical model was chosen for this research due to the uniqueness of heritage and territory of Armenia.

Literature review. Tourism resources determination critical for decision making process: for tourism planning (du Cros, 2001), destination development and marketing (Ptáček, Roubínek, & Jan 2015; Sheng & Lo, 2010). At the macro level tourism resources could be divided by natural and cultural (L. Yan et al. 2017). The cultural tourism resources described with huge varieties of heritage cites, including cultural, industrial, agricultural (Landorf 2016; Metsaots, Printsman, & Sepp 2015; Ptáček et al. 2015; Sun, Jansen-Verbeke, Min, & Cheng 2011); cities, towns, streets and squares (Bucurescu 2013; Neupane,

Anup, & Pant 2013; Pawlusinski & Kubal 2015; Southwell, 2002 Fisher, 2006; Kuo & Wu, 2013).

On the other hand the natural part of tourism potential has been studied thoroughly by USSR scientists which brings about the main difference in this research area from the Western scientists (Zyryanov 1995). The Westerners paid more attention to economic benefits (Clawson & Knetsch 1966; Buttler 1980; Krippendorf 1980; Bull 1998; Swarbrooke & Horner 2001), cognitive and entertaining tourism. For example, having sufficient knowledge about the market where the product is placed (Kotler et al. 2006), and the importance of differentiation from rival destinations (Pike & Ryan 2004).

In USSR and after its disintegration in the Commonwealth of Independent States countries, in contrast, scientists paid a great attention on restoring health and studying the natural tourism resources (Vedenin & Miroshnichenko 1969). Even more, if one part focused on the climate study (Faibusovich & Chechetov 1973; Danilova 1976; Tverdokhlebov & Mironenko 1981), the others were focused to the influence of the landscape (Tarasov 1973), rivers and lakes (Vedenin & Filippinovich 1975; Nefedova 1981). This area remained to be popular even after USSR (Dirin 2010; Nazarov & Postnikov 2001). In close ties with natural component studies estimation of active tourism potential became a new path in Russian recreational geography in late studies (Myshlyavtseva & Zyryanov 2012; Korolev 2019).

In the 1970s, some researchers realized that the estimation of one or several components does not draw a whole picture of the tourism potential of a place. As a result, complex landscape studies have been conducted in recreational geography (Likhonova and Stupina 1975; Isachenko 1972; Pritula 1974; Smirnova 1981) and continuing to be important research area for tourism potential and resources estimation (Rubtsov, Shabalina 2004; Sarancha 2006; Khudenkikh 2006; Shirinkin, Pakhomova 2007; Kuskov 2011). Despite of small number natural resource studies outside of USSR and Russia, there are still some, such as in Chiang Mai prov-

ince of Thailand (Emphadhu & Ruschano 2007, pp. 739-746), in Serbia (Bjeljac, Ćurčić, Brankov 2012).

Nowadays all tourism potential estimation methods could be divided into two; quantities and descriptive. (Yan et al. 2017). Example of typical descriptive studies are Grafenauer (2015) where he demonstrated the historic town in Slovenia trying to accentuate insight of tourists luck and Ptáček et al. (2015), a similar study conducted in Olomouc (Czech city). Both papers aimed to show the attractions and vast unused touristic potential of the place. Most popular models of tourism potential estimations also have different approaches. For example, the du Cros's (2001) model of robusticity where heritage sites can be classified into four types based on marked interest. Another model is estimation by GIS methods which dates back to the last century (Molnar & Tozsa 1983) and with remote sensing also useful even to this day (Poonia 2013; Mikhailidi 2014).

Economical methods also have been used for determining destination potential with more accuracy such as SWOT analysis (Cooper et al. 2008; Murphy & Murphy 2004; Collins-Kreiner & Wall 2007). The weighted sum model/method (WSM) is an extensively used method for multi-criteria decision analysis which has also been adopted for many different regions (Kasim, Kayat, Ramli, & Ramli 2016). The quantitative approach by L. Yan et al. (2017) helps rectify the situation caused by the domination of qualitative assessment methods of tourism potential assessment.

Material and methods

Choice of territory. Syunik Marz (territory 4,506 km², population 142000, 2011) of the Republic of Armenia has been chosen in order to apply the proposed method. The choice of the region of study was because of the following reasons:

- The region is separated from neighboring areas by physico-geographical boundaries and barriers which increases the value of its separate study.
- The region has a border with the Iran, which makes it possible to receive foreign tourists

without transit territories.

- The region has a historical and cultural advantage in comparison to other regions.
- The surface is characterized by large absolute height and relative elevations.
- Development of tourism in the region began recently.

Terminology. Touristic potential of the territory generates the touristic attractiveness which includes: **touristic objects** (attractive objects), **touristic resources** (service, labor and infrastructure), **information resources** and the **social-economic-ecologic situation**.

Resources are all components created by human or represent a human's (society) capabilities. This includes accommodation and catering facilities, car rental points, tourist information centers, touristic firms, tour guide services and the general workforce. The main criterion for assessing this component of the tourism system is quality, quantity and cost. However, potential of resources will not be evaluated separately in this paper.

Attractive objects are the traditional components which classified in three main groups:

1) *natural objects* – these include naturally occurring features such as waterfalls, lakes, rivers, mountains and so forth;

2) *historical and cultural (anthropogenic) objects* – these include constructed buildings such as architectural monuments, historical churches, castles for housing royalty, and even bridges, etc.;

3) *natural-anthropogenic objects*-(these are those objects whose attractiveness is placed on both nature and humans at the same time) – these features include hanging bridges, water reservoirs, some events that have cultural value such as holidays, some festivals and even popular constructions (for example world-known entertainment centers, big and famous hotels, museums and even restaurants).

In order to study the attractive objects, the method of full induction was used. The attractiveness of the objects was assessed of the Syunik marz region of the Republic of Armenia by

using the integral geographic method.

Three groups of objects were selected in order to study the touristic attractiveness of objects as shown on Table 1 based on diversity and

hierarchy of attractiveness (McKercher 1996). These objects were evaluated using 12 criteria for assessing the potential and then combined into four groups:

Table 1 – Criteria for assessing the attractiveness of objects (real and prospective)

No	Value	Historical-cultural objects		Natural objects		Natural-anthropogenic objects	
		Max.	Prospective	Max.	Prospective	Max.	Prospective
1	Individual characteristics	4	0	1	0	1	1
2	Information saturation and popularity	4	4	2	2	2	2
3	Accessibility	2	1	2	1	2	1
4	Influence of natural factor	2	1	0	0	0	0
Maximum points		12	6	6	4	5	4

Mathematical analysis of basic data: First, a list of protected historical, cultural and natural sites created by the RA Ministry of Nature Protection in 2007 was obtained¹. These sites were observed and a list of their inherent features was noted. A total of 572 sites with touristic potential of attractiveness were determined, and they were further divided into 3 groups.

In order to compare the obtained results with the maximum possible assessment, a mathematical method was employed. of the "project ranking" method (Penski 2010) is manifested in the definition of integral estimates. The calculation formula is as follows:

$$\delta = \frac{\sum_{i=1}^n a_i * b_i}{\sqrt{\sum_{i=1}^n a_i^2} * \sqrt{\sum_{i=1}^n b_i^2}} \quad (1)$$

δ – integral evaluation of the attractiveness of a particular object, a_i – assessment of prospects, b_i – real valuation.

The first step was to obtain δ for objects in two different states as shown in table 1 below. The first state was in real state, or (δ_p), and also in the perspective state, or (δ_n), and this was done by increasing the score to the highest attainable depending on each object's type and location. The difference between the two states was then obtained using the formula below:

$$\Delta = \delta_n - \delta_p \quad (2)$$

In the above formula Δ represents the difference between the real and prospective integral estimation of attractiveness. The results of these evaluations and analysis of historical, cultural and natural objects are presented accordingly.

Geographically analyzing the results. All the objects that have any manner of tourist potential were identified in the region of Syunik Marz. The value of each object was shown on a three-level gradation on figure 1, and this was based on a final evaluation given the relief map.

GIS was used in order to give an overview of territorial features in greater detail. The point density tool was used to measure the density of historical and cultural objects, and the data was later interpolated. The results of this process are shown in figure 2.

This figure shows maps that only reflect the given density of objects. By taking into consideration the potential of each object, the density data can be supplemented. Figure 3 therefore shows this supplemented data of an object's density and its potential.

The maps shown in the figures were created using the ArcGIS tool called density of nuclei, and for this a search radius was calculated separately using the following algorithm:

$$\text{Search radius} = 0,9 \times \min \left(SD, \sqrt{\frac{1}{\ln(2)}} \times D_m \right) \times n^{-0,2}, \quad (3)$$

SD – standard distance, D_m – median distance, n – number of points (objects under consideration).

¹ Ministry of Nature Protection Republic of Armenia. URL: <http://www.mnp.am/?p=194> (Accessed 20 June 2020).

Results of the study

The value of attractiveness of all 572 objects was determined, and only some objects had a close to maximum score. Unsurprisingly, these objects are some of the most popular tourist sites in the region.

In analyzing the assessments, it was possible to identify the strengths and weaknesses and also to improve the results by employing specific criteria. This notwithstanding, these objects had a low score when it came to Information technology, but this could be improved if there was increased promotion and marketing in the tourism space. These indicators however cannot be improved by all criteria; for instance, the remoteness or the type of facility cannot be easily changed.

Shown in Table 1 is the maximum score as well as each object's score. By considering each group of object's prospective values, the maximum value in terms of points can be obtained (Table 2).

The personal characteristics of these natural objects can in some cases be improved. By employing engineering solutions, for instance, improving a waterfall's water flow artificially can help improve the characteristics of a natural waterfall. This way, the object is no longer a natural object, but a special group of objects called natural-anthropogenic.

Below are the scores and percentage totals (Table 2).

Table 2 – The correlation between the real and potential

Value objects	Natural-anthropogenic objects	Natural objects	Historical and cultural objects
Total number of objects	5	54	503
Real (point)	25,5	168	2615
Perspective (score)	27,5	277	4690
Percent (%) of use	92	60	56

Table 3 – Objects with maximum ratings

No	Name	Type	The nearest settlements	δ_p	δ_n	Δ
1	Tatev metc Anapat	Monastery	Tatev	0,941	0,941	0
2	Kapan	Settlement	Kapan	0,919	0,919	0
3	Bheno	Monastery	Bardzravan	0,927	0,936	0,01
4	Bakxaber	Fortress	Andokavan	0,938	0,945	0,01
5	Aksel Bakunc	House-museum-building	Goris	0,892	0,937	0,04
6	Sv. Ogan	Church	Sisian	0,936	0,979	0,04
7	Garegin Njde	Memorial Complex	Kapan	0,887	0,932	0,04
8	Kataravank	Fortress	Kapan	0,919	0,962	0,04
9	Key Kataravank	statue	Kapan	0,892	0,937	0,04
10	Vorotnavank	Monastery	Vaxatin	0,900	0,936	0,04
11	Church Tatev	Monastery	Tatev	0,890	0,936	0,05
12	Khndzoresk	Settlement	Xndzoresk	0,881	0,936	0,05
13	Verishen	Settlement	Verishen	0,881	0,936	0,05
14	Andranik Ozeyan	Monument	Angexakot	0,857	0,904	0,05
15	Davit Bek	Memorial Complex	Kapan	0,846	0,900	0,05
16	Unan Avetisyan	statue	Kapan	0,883	0,937	0,05

To determine the percentage increase in potential value for all types of objects, the weighted value for the whole region was calculated, and it came to 54. This is an integral assessment of the attractiveness of the territory.

In the verification of the created method, known objects in the region with the highest

scores identified by studying tourist stops in the region were compared.

When evaluated using the above method produced a high score of attractiveness). The results showed that the objects having both a large number of visit and a greater attraction match. Thus, the results of this study are reliable and

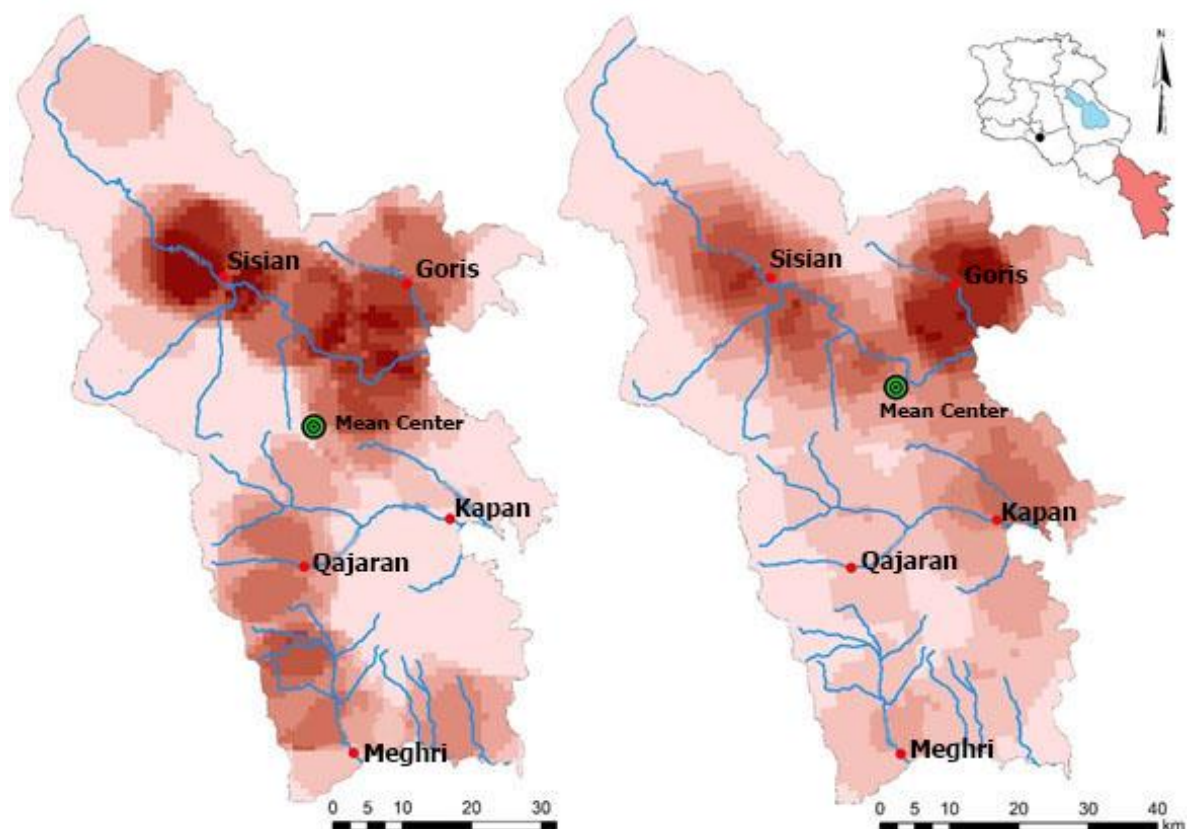


Fig. 2 – The above shows density of historical-cultural (a) natural (b) of objects of the Syunik marz

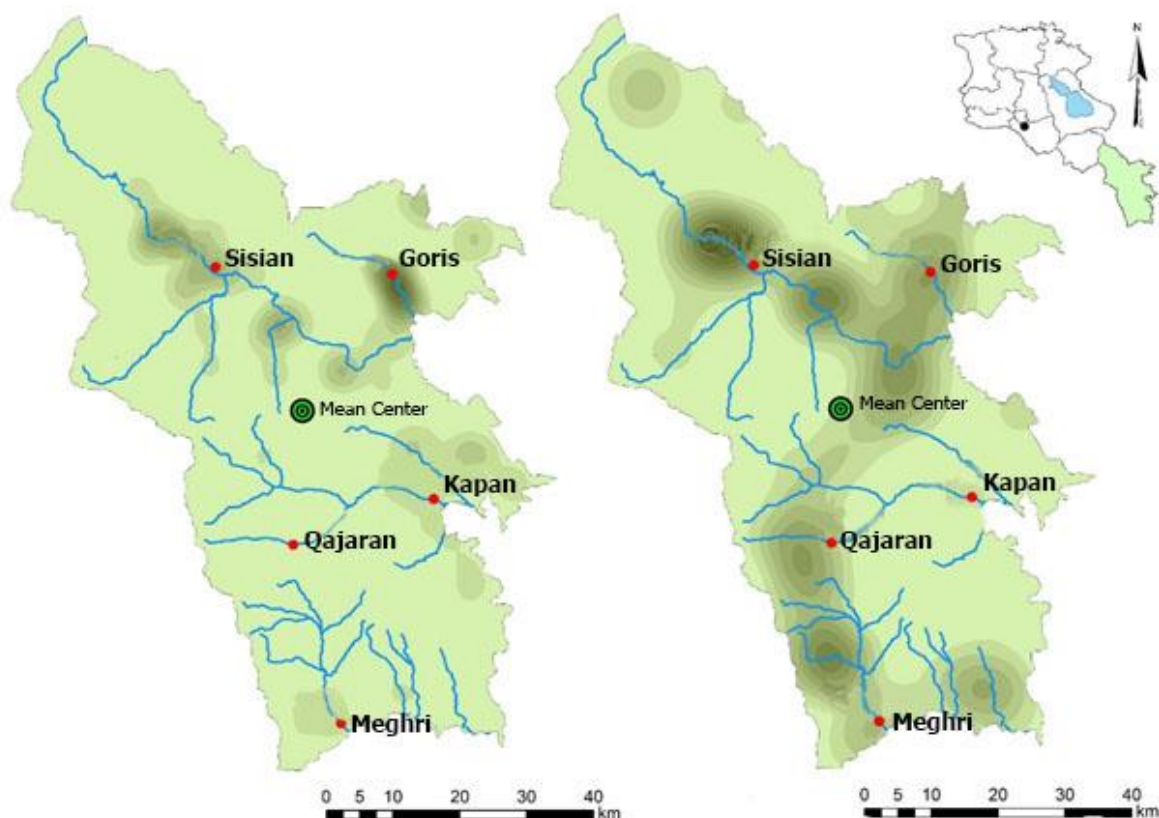


Fig. 3 – The Density of historical-cultural (a) and natural (b) objects depending on their attractiveness

This is due to economic factors and the possibilities of automobile transit. This direction in the last 10 years has become quite popular. The first difference between the two images is that the presence of historical and also cultural objects starkly differs from one place to the other. Around Goris, as an example, a particular group's objects are densely concentrated. In Sisian's vicinity, natural objects tend to be observed at a larger number. Historical and cultural objects are however not present in large number as natural objects in the area near Kajaran as well as in the southern part of Meghri. In areas where there is rough terrain such as slopes of mountains, historical and cultural objects are observed, and this terrain makes adulteration of these objects difficult. Moreover, the objects have a prevalence near Kapan, where there are almost no natural attractions.

In summary of the data in table 2, we can draw the following conclusions; Significant cities almost always surround the areas that have high concentrations of natural, historical and cultural objects. Another observation is that Sisian and Goris cities have both natural and cultural attractions in a high concentration, while the cities of Meghri and Kajaran are characterized by many tourist attractions. Lastly, many objects can be observed along the area between the cities of Sisian and Goris.

The existence of a large number of natural objects in between the cities of Kajaran and Meghri can very likely be attributed to the presence of the NPA. In the northern and southern parts of the city of Kapan, there are many cultural attractions. This is because the city is an administrative center of that particular marz, and also the fact that there are favorable conditions.

The calculated mean outlined in figure 3 describes the distance from one object to the next as an average, and it is in an area that has a low density of objects. The area has mountainous terrain and thus makes the main centers to be more or less remote, and they gravitate in a north-south direction. This orientation is more to the north of the marz, and this is because there

exists numerous historical and cultural tourist attracting objects.

Conclusion. The obtained data indicates that the territory has great potential to develop tourism. The territory has diverse cultural, historical and natural features that can be used to this end. The suggested method can be applied in the future to identify tourist attractiveness of separate objects as well as the region as a whole.

Based on the results, it is evident that half of the tourist potential is not utilized, and the main reason being the lack of information. This can be seen when looking at a smaller of objects in the region and extrapolating this observation to the region as a whole. There is also the problem of lack of a sufficient road network. This excludes some objects with good scores from the main tourist network. The **lack of information support** of attractive objects is therefore a primary problem of tourism development in the region.

The attractiveness assessment methodology was tested in the Armenian region of Syunik Marz, and can be also used to assess attractiveness of other Marzes in the country. The major aim in employing this method is to find out tourist attractiveness before any endeavors to invest in tourism enhancement ventures. Further, using this formula is important because it helps in discerning between the actual attractiveness of a place or an object and the perceived attractiveness or how the place or object is viewed in the public eye.

Suggestion. Based on the findings of this study, the following suggested tourist facilities and destinations would be most optimal. A "tourist hub" in the Syunik region gives prospective tourists many sights to visit as they make their way to it. The entire region is beautiful, with natural sights for the tourists to marvel at using the least effort and minimal expenditure.

There is also a location that lies between Tatev monastery and the Shakinsky waterfall where the construction of the hub can be ideal. In this location, there are rural settlements that include Vorotan, Vakhatin, Shamb, Darbas and

Lutsen.

The choice of the hub is not optimal for mountainous regions because of the limited area and the fragility of landscapes. The development of tourism cannot be realized without new infra-

structure in the mountains, but this is possible in the proposed region.

All this will help solve many social and economic problems such as remoteness and relief that exist in the mountainous region.

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