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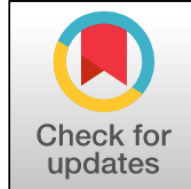
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Geo Information Technologies as a Tool for Managing Tourism Resources

Teknologi Informasi Geo sebagai Alat untuk Mengelola Sumber Daya Pariwisata

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Abstract

Today, the process of developing tourist destinations is possible only by using modern spatial planning tools for tourism market entities. To carry out this in the power of geographic information technologies, which are actively being implemented in all spheres of our life, including in tourism. For a real assessment of the recreational potential of the region, which has unique natural, historical and cultural potential, it is necessary to create geographic information systems (GIS), which reflect in the same way all the rest necessary for implementation in tourism products, infrastructure. Simple sites of travel agencies, service sectors, paper maps, guides and other well-known materials are not capable of flexibility and, most importantly, quickly respond to changes, innovations. These factors are especially valuable when studying the potential of the territory, for the compilation of tourism products of different levels of service. This approach can guarantee the development of tourism in any territory. Moreover, make a forecast for long-term targeted programs in the development of tourism. Geo information technologies are able to not only generate demand, but also indicate investment vectors for territorial development in order to turn it into a tourist destination. The article considers the issues of geographic information support in the goals of tourism development using the example of a small mountainous regions of the Republic of Armenia. The experience of certification of resources for tourism is considered.

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INTRIDUCTION

The process of developing a GIS structure, filling it with information and outputting it as an end product into an open one: a sufficiently long work requiring a lot of effort and money. Of course, to develop a GIS model for tourism and at the same time all sorts of scales for assessments requires not only an integrated approach, but also the ability to organize the work of a large group of specialists.

Especially it is necessary to emphasize the methodology for assessing the region's resources for the needs of tourism development, especially measurement scales, since GIS requires discrete data, and this is quite complicated, and this requires an integrated approach: integrated assessment. Criteria for assessing resources must necessarily with the study of the physical and geographical conditions of a given territory [B.A. Seredovich, N. B. Klyushnichenko, N. B. Timofeeva , Geoinformatsionniye sistemi. 2008].

As practice has shown, the first thing to do is to determine the tourist zoning of the territory. The main, it is desirable to choose the administrative boundaries, as the territorial management is one of the important factors on the ground, and for the subjects of the tourism market, for final consumption: the actual borders of the tourist regions.

The second and sometimes the most important thing is the certification of tourist resources. Initially, it is necessary to group resources by their nature, such as: physical and geographic conditions, accessibility for vehicles of various levels, attractiveness, completeness as a tourist object, service sector, safety in all respects, the possibility of medical services and quick response, and finally: ethnographic, social and cultural characteristics of the local population.

In the Republic of Armenia, tourism has been adopted as one of the priority directions of development, and this is especially important for said residents, since the Republic of Armenia is a mountainous country and is subject to sharp climatic hazards. Rural tourism in this regard is an alternative source of income [].

Using the above approaches, during 2017-2019, tourism resources were certified for the integration of rural tourism. The project was carried out at UNDP with financial support of the Russian Federation The author of this article was an expert and an analyzer of this project [Integrated Rural Tourism].

The project has three main components:

1. Planning of sustainable integrated rural tourism;
2. Increasing income level through diversification of tourism products and services in the community;
3. Sustainable Destination Management.

Tourist resources of the villages were scored in terms of security, attractiveness, accessibility and the potential time a tourist could spend there. Each village was scored by two independent specialists, based on a 1-5 scale [Armenia. Sustainable Development Goals & What Is Undp's Role?].

METHODS

The Assessment process implies the following steps:

1. Collection of respective data for all villages.
2. Scoring each village across a set of criteria.
3. Consolidating all scores into a Master Matrix.

Two types of data is collected for each village: the tourism potential of the village and its socio-economic characteristics.

a. Tourism potential refers to:

1. **Tourist attractions**
2. **Nature** & natural risks.
3. **Human Made**
4. **Human Living**

b. Support services - services and infrastructures:

c. Socio-economic characteristics of the village:

(Geography, economy & demography).

In addition to subject-matter specialists involved in the teams, two experts: professionals with academic and industry expertise, were hired to supervise and validate the work of the teams [Karpik A.P. 2004].

Finally, the system to design as a plug & play platform (where any new layer of data can be easily added). The definition of tourist specialization of the territory was carried out using data analysis. According to the state of individual resource groups, the tourist specialization of one settlement was determined, in the distance for groups and in the whole region. Regions in RA 10, they are called marzes. The basis for the formation of marzes is the physical and geographical zoning of the territory of the Republic of Armenia. As a result, climate data such as climate comfort and conditions are easily identifiable. In the Human Made category, categories such as accessibility, security, landscape integrity, or attractiveness have been investigated as cad astral information

The most time-consuming process was the definition of Human Living, since many factors can only be determined on the spot, so fieldwork was practiced. I must say that as the main surveys during the field studies were supplemented or adjusted all other databases. For the Recreation & entertainment section, the time that the tourist is supposed to spend was taken as the unit of assessment. At the first stage, the methodology of such an assessment seemed ineffective to us, however, the study of tourist statistics confirmed our approaches.

On issues of Support services, and Socio-economic characteristics of the village, it became necessary to coordinate information sources for specialists. For this, a library of reference information materials and a link bank were created in dropbox.

In this case, GIS maps that were created at the initial stage of the program and supplemented by new information gained weight.

In the study of socio-economic issues, manufacturing enterprises, especially those producing building materials (dust, noise, vibration) and mining quarries, which, in addition to these factors, carry out blasting operations, have huge tailings of waste, become an important determining factor. Therefore, an additional category << Factors hindering the development of tourism >> was introduced.

To identify these factors, we used data from remote sensing of the earth, satellite images, as well as on-site observations. As a result, particularly dangerous territories were identified that were removed from the issue of certification.

The assessment identified a number of difficulties: Primary sources are not always true, different information about the same object, old or incomplete information.

In such cases, communicating with local leaders was the best solution. Reliable information was received by telephone or Email. For this, a special questionnaire was developed. The result was satisfactory, while saving time and money.

RESULTS

New tourism resources are created every day. And in accordance with this GIS is able to quickly respond and provide a reliable analysis of changes in the structure of tourism resources. Our program has proven the effectiveness of the methods of studying and certifying resources, as they revealed a concealment of opportunities in rural areas that were not even know about. At the same time, with the help of GIS, villages were selected that could become tourist service centers. The status of individual resource groups determines the tourism specialization of regions. For example, climatic comfort, mineral water, characteristics of forest parks allow the development of therapeutic and recreational tourism, and the rich cultural heritage is so informative tourism. The tourist GIS creates the preconditions for the cadastr of resources of the region as a whole and can serve as an opportunity for the development of the region as a whole and especially on issues of investment and return on finance [Karpik A.P. 2004].

DISCUSSION

Potential users of tourist GIS can be divided into two groups:

- management and planning the development of tourism, as ministries, local government departments, tourist agencies, tourism market entities, tourist product developers, tour operators and tourist clubs;
- investors, scientific and educational institutions, consumers of tourist services and ordinary travelers.

In the Republic of Armenia there are GIS of specially protected natural territories, other local GIS as alternative and extreme types of tourism. Any information about tourism has become a daily need, regardless of the type of consumption, and therefore local information programs in tourism are everywhere. However, management and especially territorial and landscape planning require reliable sources of information that will help in the analysis of long-term projects and identifying risks for investors.

CONCLUSION

Globally, the effectiveness of GIS in tourism will be expressed by:

For tourism market entities: formation of a favorable image of the country, its regions. For business tourism structures: increased activity of the tourist market and the creation of the multiplier effect of tourism activities.

GIS is primarily a business and through the provision of information is also a business. So invested in any GIS project can be considered payback. So foreign experience shows. No less important is the speed of analysis of spatial planning issues as a tour route. Customer questions like: price / quality, climate / roads, service / level sometimes require very quick answers [Atlas climate and natural health-improving resources of Armenia, Yerevan, 2010].

Given the experience of leading tourist countries with the help of GIS and GIS analysis, it is possible not only to increase, but also to regulate the flow of tourists. This creates stability in all areas of the tourism market. An accurate assessment of resources in GIS will help preserve the natural and cultural heritage for future generations.

The world around us is changing rapidly and a constant flow of information becomes necessary as <<food>>. For future tourism professionals, mastering the compilation and use of databases and the possibility of GIS analysis becomes more than relevant.

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