

UDC: 338.48]:528.4:004.6(497.771:285)

Review Article

THE IMPORTANCE OF CREATING SPATIAL DATA INFRASTRUCTURE IN ORDER TO DEVELOP TOURISM FOR THREE CITIES IN LAKE OHRID - STRUGA, OHRID AND POGRADEEC

Sali Zhaku¹, Arben Oda¹, Resul Hamiti²

¹*Department of Tourism, Faculty of Economics, University of Tetova, Republic of North Macedonia*

²*Faculty of Natural Sciences and Mathematics, University of Tetova, Republic of North Macedonia*

**Corresponding Author: sali.zhaku@unite.edu.mk*

Abstract

The need for spatial planning and their distribution has stimulated the development of spatial data infrastructure at national, regional and global levels. The initiatives aim to provide a smooth, fast, unique and simple access to spatial data to all interested users. This applies to all those who in their work are directly or indirectly related to the use of spatial data such as: spatial planners, architects, civil engineers, agronomists, foresters, travel agencies, citizens, etc.. The importance of spatial data infrastructure that was understood from the moment when people realized the importance and value of information about space and location of activity, is when they realized that information on spatial data should be collected, processed and be available for anyone interested. Creating spatial data infrastructure for three cities that lie on the shore of Lake Ohrid, Struga, Ohrid and Pogradec (R. Albania) is a very important element that would be used in all walks of life, economy and science. This paper will present the influence of spatial data infrastructure for the region, intended to boost its economic development, especially tourism as economic branch with a lot of resources. We also emphasize the damage that this region has as a result of the lack of spatial data infrastructure and the benefits that would have as a result of the creation of spatial data infrastructure. The physical-geographical and socio-economic characteristics reflect the natural and human resources available to this region, the possibilities of economic and social development of the region and the possibility of regional cooperation regarding the attractive resources of Lake Ohrid.

Keywords: region, tourism, economy, geospace, lake, infrastructure etc.

1. Introduction

The physical-geographical characteristics represent phenomenon and processes in nature, which were created under the influence of natural forces, on which man can not influence because their genesis is under the influence of endogenous factors which are unique and irreversible, where an example of this is the greater wealth of this region, Lake Ohrid. Therefore, this information, such as: relief, hydrography, climate, geological composition of the soil, vegetation, etc., should be listed in the basic information (framework) of spatial data infrastructure.

The important elements that play a major role in economic development and society in general are: cadastres, properties, lake shoreline, communication infrastructure, administrative boundaries, spatial regulation, forestry and agriculture as branches of economics, ecology, geographical names, etc. These elements are part of the very important geospatial data information that an investor should know about the region.

For the realization of this work are used several scientific methods:

- collection of theoretical information from contemporary local and foreign literature;
- illustration of theoretical material with photos, sketches, etc.
- cause-and-effect analysis, in order to highlight the factors that affect the development of tourism.

The information has been and remains a key element in economic and social development widely, so the spatial data infrastructure for the region will have positive effects for the reason that the

promotion of spatial data through the Internet and other electronic devices will be available in every moment for all interested. This will directly affect the economic development of the region and in particular the economic sectors that have more potential in this region such as tourism, agriculture, livestock, light food industry, etc.

2. Tourist potentials

Good geographical conditions, the existence of Lake Ohrid, as one of the most beautiful lakes in Europe with a rare beauty of the lake shores, high biodiversity, rich flora and fauna, river network, rich cultural heritage, historical places, quality cuisines and above all have made the cities of Struga, Ohrid and Pogradec develop as a tourist centers, visited by many local and foreign visitors. The perspective of economic development for these three cities is tourism, but for the development of this branch, a modern infrastructure must be established and a proper study must be done, to use these potentials and develop other forms of tourism such as rural, winter, health, cultural, fishing, hunting, etc., which will enable tourist activities throughout the year.

Tourist motives are attractive elements, phenomenon and processes in nature and society, which ensure the attraction of tourists and the satisfaction of tourist needs. The main elements for attracting tourists are natural motives (geomorphological, climate, hydrographic and biogeographical) and anthropogenic motives.

2.1. Natural tourist motives

2.1.1. Geomorphologic motives: Geomorphological motives are tourist motives which emerge from the relief properties of phenomena and processes in space (*Marinoski N.: Turistička Geografija, Skopje, 2001*). In the complex relief of this area, the two main morphological units stand out immediately, such as the graben basin of Lake Ohrid, with constituent parts of the Struga and Ohrid plains as a unit in itself and Pogradec and the limited mountain ranges. They are separated from each other by natural morphotectonic boundaries, which are represented by normal tectonic detachment, where the closure of mainly horstantiklinal structures to that of the graben of Lake Ohrid takes place. These morphotectonic boundaries are well expressed in morphogenesis, in the current relief of this area, represented by structural cliffs, mainly tectonic ones, which are modeled during the plan of these detachments.

The Struga and Ohrid plains and the limited mountain ridges lie in the physical-geographical units of Western Macedonia. To the east of this graben basin lies the Galichica range that extends east between Qafa e Livadhit in SE and the Belcishta basin from the NW. To the north it is bordered by the Karaorman mountain range, which rises between the tectonic valley of the Black Drin River in the west and that of Sateska in the east. To the west of this basin lies the Jablanica-Belica mountain range, between Qafe Thane and the Graben Domosdova valley (outside the border), which closes in the north to the Graben basin of Dibra, while in the south the border passes along the water mirror of Lake Ohrid.

Pogradec field and the limited mountain ridges lie in the physical-geographical units of Southeast Albania. This area consists of several morphological units: Pogradec pit, Buchimas field, Mokra highland, Mali Thate, Gora highland, Guri i Zi (Blackstone), Valamares and Guri i Topit mountains (*Bashkia Pogradec., Analiza dhe vlerësimi i teritorit, 2019*).

2.1.2. Climate motives: Climate is one of the most important tourist motives, because it directly affects other natural tourist motives, and its characteristics depend on the structure and distribution of vegetation, the hydrological characteristics of hydrographic tourist motives.

The aforementioned natural boundaries of this area have enabled the conditions of a changing Mediterranean climate, of course with less pronounced features, thanks to the influence of the Adriatic Sea from the west, but on the whole preserves the features of a medium continental climate. These features of the climate conditions of the area are expressed quite well in its special elements with their daily, monthly, seasonal and annual progress which play a very important role in its morphogenic and socio-economic phenomenon.

2.1.3. Hydrographic motives: Apart from the fact that water is an irreplaceable element for life, it is also one of the main tourist motives, and are the dominant motives for attracting tourists. The aforementioned geological factors and climatic and morphological conditions have also determined a very rich water network of this area, compared to all other areas of Macedonia and beyond. Struga and Ohrid are represented by these water resources: Lake Ohrid, the Black Drin River, Lumi i Madh (Big river) Sateska river numerous sources and two aquifers in the Black Drin River, that of Globochica and that of Dibra with great economic values., the river Kosel, the river Vevchani, the river Belica, the glacial lake of Podgorca, Vevchani, the lower part of Labunishta, the upper glacial lake of Labunishta, the powerful sources of Ostrova in St. Naum with 11 cubic meters per second, etc.

Hydrographic network of the field of Pogradec consists the Pena River, Lenges River, Bishnica, Dusha, Radichina, Cherava, Drilon, Verdova, Lake Ohrid, Liqeni i Madh (Great Lake), Lukova, Lenga, Gur Topit lakes and the numerous carstic success of Drilon and Tushemisht.

2.1.4. Biogeographical motives: The flora and fauna as an integral part of the living environment depend on climate, relief and hydrological characteristics, and has the great importance for attracting tourists. In other natural components of this area, an important place is occupied by plant cover, which is relatively rich and diverse, characterized by a vertical area closely related to soil types (*Mersimllari M., Raport mbi florën dhe vegjetacionin e rajonit Ohër-Prespë, 1997*).

The wealth of this vegetation cover is directly related to the aforementioned climatic-terrestrial conditions, of an alpine relief, the diversity of the lithological composition and the geographical position of the area. In the geobotanical context, this vegetation is included in the holartic area, especially in that of Central Europe, but it has the closest connections with the Balkan ones. This plant cover is dominated by forests of various species, which give way to alpine pastures, which we are treating below, starting with the oak and beech tree. The animal world with its diversity in the Struga region is an important tourist biogeographical motives.

2.2. Anthropogenic motives: Anthropogenic motives represent phenomena and processes in space that were created as a result of human activity. Anthropogenic motives include: ethnosocial, cultural, historical, manifestations and environmental. The first group of motives, which include economic activities, traditional cuisine, folk traditions, old house interiors, folk art, folk costumes, folk literature, etc., are quite present in Struga and the surrounding area as a tourist area.

2.2.1. Cultural-historical source: The cultural-historical source which is quite rich but not discovered and presented in the Struga valley is very important and presents material values from the past to the present which shows the culture of the people and the development of society from the past to nowadays. This includes the old settlements discovered by archeological excavations

and which are still in undiscovered underground, monuments, mosques, churches, monasteries, castles, etc.

Old archeological settlements that represent a cultural source and the development of society in Struga are found at the source of the Black Drin in the place called "Gryke", in the village Dologozda in the place called Setelia (St. Ilia), Alaniva, the castle of Dologozhda, Crck, the locality called "Varreza" (graveyards) in the village of Ladorisht, the locality in the village of Trebenishta between Struga and Ohrid, in Vranishta, Veleshta, Tashmarunishta, Dobovjan, Oktis etc. It should be noted that many sites in Struga and the surrounding area are undiscovered and many have been destroyed by wild diggers to gain material value and not knowing the true value it represents.

The religious buildings that represent the spiritual culture of the population living in the Struga valley are numerous, such as the "Mustafa Chelebi" mosque built in the 15th century, the mosque called "Teke" and the "Sulejman Arap" mosque in the city of Struga and a number of mosques in rural settlements, such as in the villages of Dologozhda, Ladorisht, Veleshta, Labunishta etc.

The most popular churches are: St. Georgia and St. Petka in Struga, St. Bogorodica together with the monastery in the village of Kalisht, St. Spas in Vishnja, etc.

The monuments of Struga were erected after the Second World War, such as: The monument of the revolution in the middle of the city of Struga, the monument in memory of those shot by fascism in the village of Ladorisht, the monument of those killed during the Second World War in Koroshishta, in Vevchani, Podgorica, the Skanderbeg War Memorial plaque in the village of Livadhi, and many busts of heroes and renaissance.

Ohrid as a city which with a tradition of more than 7500 years old, is an invaluable treasure of cultural heritage, not only for Macedonia, but also for prehistory and European history (*Grup, 2008*). Lake Ohrid, as a geo-natural phenomenon and an attraction of a special kind, is one of the oldest lakes in the world, within which it preserves archeological values, which enrich the cultural heritage of the city of Ohrid. The prehistoric era is represented by water-dwelling settlements known as palafites. The buildings were built on a wooden platform that rested on huts mounted vertically on the floor.

To provide a clear picture of this type of settlement, one should take as an example the discovered palafite, and now reconstructed in the locality Gjiri i Eshtrave (Bay of Bones) on the southeast coast of Lake Ohrid, near the village of Peshtan. The city of Ohrid flourished during the period of early antiquity, which includes classical, Hellenistic and Roman civilization, and less in the period of late antiquity, which is identified with the processes of late Roman and Paleo-Christian culture during the beginning of the Middle Ages, Trebenishta near Ohrid, etc. Among the very reprehensible objects of profane character is the Ancient Theater which dates back to the 2nd century BC and as such has functioned until the 5th century AD (*Mikulçiq I.: Antički gradovi vo Makedonija, Skopje, 1999*).

Traces of the Roman period are presented by the basilicas discovered in the city of Ohrid and the basin of Lake Ohrid. We would mention the Octagonal Basilica in the Imaret Complex (the old core of the city). Then the "St. Erasmus" Basilica in the village of Podmol and the Basilica of Studenchista (Ohrid) etc., are of the great interest. Medieval Age - while the civilization of antiquity reached its greatest development towards the end of this period, known as late antiquity (*Mikulçiq I.: Srednovekovi gradovi vo Makedonija, Skopje, 1996*), that is, before the Slavs penetrated the Balkans, at the time of the collapse of the Western Roman Empire (in 476). The Byzantine Christian period, dating from the end of the 9th century and the beginning of the 10th

century, is the time when the Ohrid Castle began to be built, representing an important profane monument, which will take on its present appearance from the 13th and 14th centuries during the governance of the city of Ohrid, by Prince Andrea Gropa.

Among the rare examples of the oldest basilica type, today in this city is preserved the cathedral ensemble St. Sophia where the seat of the Ohrid Archbishopric was, the monastery "St. Naum" in Lubanishta - Ohrid, the church "St. Bogorodica Perivlepta" in Ohrid (*Group of authors: Hristijanski Spomenici, Skopje, 2008*), etc. Ottoman Islamic architecture is an undeniable reality for the city of Ohrid. It is also an Islamic-Ottoman culture, which for five centuries, from the end of the fourteenth century to the beginning of the twentieth century (*Group of authors: Osmanliski spomenici, Skopje 2008*) and is presented by the Ali Pasha Mosque (1491) and Teke Zejnel Abedin Pasha (late 16th century) in Ohrid. Turkish traveler Evlia Chelebi says in his descriptions that in the 17th century there were 32 mosques, 7 madrasas, 77 public baths (hamams), 3 inns and 150 shops in Ohrid.

The archeological settlements that represent the historical and cultural development of Pogradec are: palaeological settlements of the Neolithic period (6000 BC), graveyards of Selca (IV century BC) archeological findings of the Iron Age near the church of St. Procopius, the city castle, the castle in Blace, the castle in Lower Selca, the mosaic of Lin of the Byzantine period.

2.2.2. Cultural events: Cultural events held during the year in Struga are also tourist values for attracting visitors. These manifestations show cultural achievements, old traditions, traditional clothing, etc., are numerous and all nationalities that show the ethnic structure of the population.

The main events in Struga are: "Struga Poetry Evenings" international event where poets from all over the world gather with their creations, the festival of folk songs and dances "Struga Jeho". "Revyja of folk costumes" organized by the museum of the city of Struga, "Struga Music Autumn" of light and serious music (Municipality of Struga). The presentation of the ethnographic values, flora and fauna of the lake and the land is done by the museum in the city of Struga "Dr. Nikola Nezlobinski" founded in 1928.

The events organized by the city of Ohrid are: "Ohrid Summer", the annual international event where the most famous artists of the world stage gather, "Balkan Festival of Folk Songs and Dances", an activity that began in 1962 with the participation of cultural and artistic societies from the Balkans and beyond, "Poetry Night in Veleshte", "Festival of Choral Music", "International Festival of Modern Dance" (Municipality of Ohrid), etc.

The events organized in the city of Pogradec are: "summer party" where a series of activities are organized, the wine tasting party, "Xinxifilo" festival, the "Balkan film and culinary festival", "the day of blessed water", the party of "St. Naum" (Municipality of Pogradec) etc.

3. Tourist infrastructure

For the reception of tourists (visitors) there is a rich network of tourist facilities of different categories, from hotels of different categories, motels, restaurants that represent the rich cuisine, self-camps, etc.

The biggest development in Struga and Ohrid was the hotel industry after the Second World War, when tourism began to develop as an economic branch. Pogradec, on the other hand, had the greatest hotel development after 1990, when the dictatorial system that had installed a closed state fell. In Struga and the surrounding area, there are about 30 tourist entities (hotels, motels, camps, resorts, holiday homes, etc.). There are about 50 tourist entities in Ohrid and about 35 tourist entities in Pogradec.

4. Spatial data infrastructure for Struga, Ohrid and Pogradec

For the creation of spatial data, a catalog of spatial data should be created that will be based on metadata consisting of basic data and other data and should be placed at the service of all interested parties through the Internet. Important data are: reliefs, climate, hydrographic network, cadastre, geological composition, soil type, plant world, spatial planning, topography, data on agriculture, forestry, traffic infrastructure, satellite imagery and environmental quality. But first we have to look at the current state of this data and then act. Of course, of all these that we listed in the best condition with data is the cadastre.

Relief, climate, hydrographic network, soil types, plant world-physical-geographical characteristics are very important elements because they bring to the surface the natural potentials for a specific area, therefore the existence of this spatial data in line for this region that unites Lake of Ohrid would be a good opportunity for all interested parties and especially for investors.

Cadastre is an important element because it derives linear data on the area, type of property, owner, heights and land category, etc. The city of Struga and Ohrid have created this data and at any moment are accessible through the internet network, while Pogradec does not have them because they continue to solve the problems brought by law 7501 where the lands were divided and not given to the previous owners.

Geological composition - is an important element because it shows the composition of the soil, which means if there is a special underground natural resource this region.

Agriculture, forestry, environment - these elements show what current development these potentials have based on current economic branches and what is the environmental quality in this region.

Planning, topography, satellite imagery, traffic infrastructure - are important elements that show the current situation, spatial planning in the future and the level of traffic infrastructure that is an important element in terms of economic development and society in general.

5. Conclusions-Importance of creating geospatial data of Struga, Ohrid and Pogradec in tourism development

Tourism is a branch of the economy in which the geospatial database is widely used and is an important element in terms of organizing and controlling tourism activities in space, and in the placement process. In the initial stages, tourism as an economic branch used only some segments of the Geographic Information System, such as data on hotels, their location, information on shopping malls near hotels, the most attractive elements of tourist centers, etc., but with the development of tourism it finds use not only in the choice of space but also in marketing, the

analysis of the circulation of tourists, and today it is mostly used in tourism planning, ie in the management of tourist resources. However, the creation of geospatial databases and their use in tourism and tourism planning is not at the desired level and we can freely say that it is at the lowest possible level.

The cooperation between specialists, especially the geographer who deals with spatial planning with the local government is at the lowest level because, the people who cover these sectors in municipalities are not specialized in this field and do not know the value of it and the importance of cooperation in general development, especially in tourism development.

The economic effects of tourism are indisputable, but the negative impact on ecosystems and the living environment is also indisputable. Therefore, in order to be better acquainted with both sides of this development and for spatial planning, in order for the negative effects to be as small as possible, the geospatial database must be built.

The creation of a geospatial database for Struga, Ohrid and Pogradec will have a major impact on the development of tourism and the economy in general. This will consist of the following directions:

Information

- Verification of current capacities
- Raising the level of tourist offer
- Creating joint offers
- Attracting foreign investors
- Encouraging the business population with tourism
- Statistical analysis of seasonal tourism revenues
- Promoting specialization in the field of tourism
- Verification of natural resources in function of tourism
- Absorption of financial means by local and central government
- Raising the economic level in the region and the country

References

- [1]. Cavallaro C., Pipino A. 1991: Geografia del turismo, Torino
- [2]. Doka Dh., Draçi B. 2009. Gjeografia e Turizmit, Tiranë
- [3]. Group of authors. 2008. Osmanliski spomenici, Skopje
- [4]. Group of authors. 2008. Hristijanski Spomenici, Skopje
- [5]. Hitrec T.1966. Zdrastveni turizam-pojmovi i koncepciski okvir, i megjunarodni simpozium, Opatija
- [6]. Idrizi B., Zhaku S. 2013. Developing of GIS dataset for conservation of the Ohrid Lake watershed area. Siparunton. 2013
- [7]. Mikulçiq I. 1999. Antički gradovi vo Makedonija, Skopje
- [8]. Mikulçiq I. 1996. Srednovekovi gradovi vo Makedonija, Skopje
- [9]. Municipality of Struga
- [10]. Municipality of Ohrid
- [11]. Municipality of Pogradec
- [12]. Marinoski N. 2001. Turistička Geografija, Skopje
- [13]. Ruzhiç P. 2009. Ruralni Turizam, Pula
- [14]. Zhaku S. 2009. Veçoritë fiziko gjeografike dhe social ekonomike të fushëgropës së Strugës, Strugë