

## SMART (TOURIST) CONCEPT IN RURAL AND VITICULTURAL AREA. STUDY CASE: NEGOTIN WINEGROWING REGION

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### Abstract

*The wine growing region of Negotin, as well as the rest of Serbia's wine growing areas, is mostly linked to rural areas. Also, in developed countries, wine tourism stands out as a product of rural tourism. Although most wineries are still in the initial phase of using innovative and smart technologies, most wineries in Serbia invest great efforts and increase the attractiveness of wine tourism through the provision of smart tourist services.*

*In the article, an assessment of the area and settlements of the wine growing region of Negotin was carried out, where there would be the greatest potential for development into smart destinations: smart villages and smart wine-growing destinations. In the analysis and evaluation, the concept of smart tourist destinations was defined as 6A (attractions, accessibility, contents, available packages, activities, auxiliary services) with the use of Geographic Information System (GIS) and Analytical Hierarchy Process (AHP). The results show that the wine growing region of Negotin has potential for the development of wine growing districts as smart tourist destinations - the city of Kladovo. The other areas of this wine growing region present an extremely poor zone of potential with a total frequency of 84.01%.*

*By investing, educating and investing additional efforts of the local community and the state, the other areas of the Negotinska Krajina wine-growing region would have great opportunities for development, especially due to the long history and tradition of the development of wine and viticulture in this area.*

**Key words:** *smart villages, (smart wine) destinations, wine growing region, smart concepts 6A, information technologies*

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## **Introduce**

The concept of “smart village” is a new concept that refers to the development of rural areas and communities from existing, traditional elements and their improvement with digital, telecommunication technologies and social innovations, using knowledge in the same. The application of this concept and the development of digital technologies can improve the quality of life, raise the standard of living, better use of resources, reduce the impact on the environment, create new opportunities for the marketing of various rural products and most importantly - promote demographic balance.

The wine growing regions of Serbia are mostly linked to rural areas, where, especially in developed countries, wine tourism is highlighted as a product of rural tourism. Most wineries in Serbia also try to be innovative by marketing new technologies and attractiveness in wine tourism and by providing smart tourist services.

The aim of this article, in addition to the promotion of wine and rural tourism, the landscape of the Negotin wine region, ecological sustainability through the introduction of new technologies, is to assess and identify the area of the Negotin wine region. That is, which part of the wine growing and rural area would have good opportunities for the development of smart tourism in the wine growing region of Negotin.

According to Tran et al. (2017), Buhalis (2000) and Gozdegul et al. (2019) and based on the current conditions and state of development of (wine) tourism in the wine growing region of Negotin, the methodology was adapted and modified for this project.

Through comparative analysis and assessment, the concept of smart tourist destinations will be defined and analyzed through the 6A (attractions, accessibility, amenities, available packages, activities, ancillary services) and the use of Geographical Information System (GIS) and Analytical Hierarchy Process (AHP).

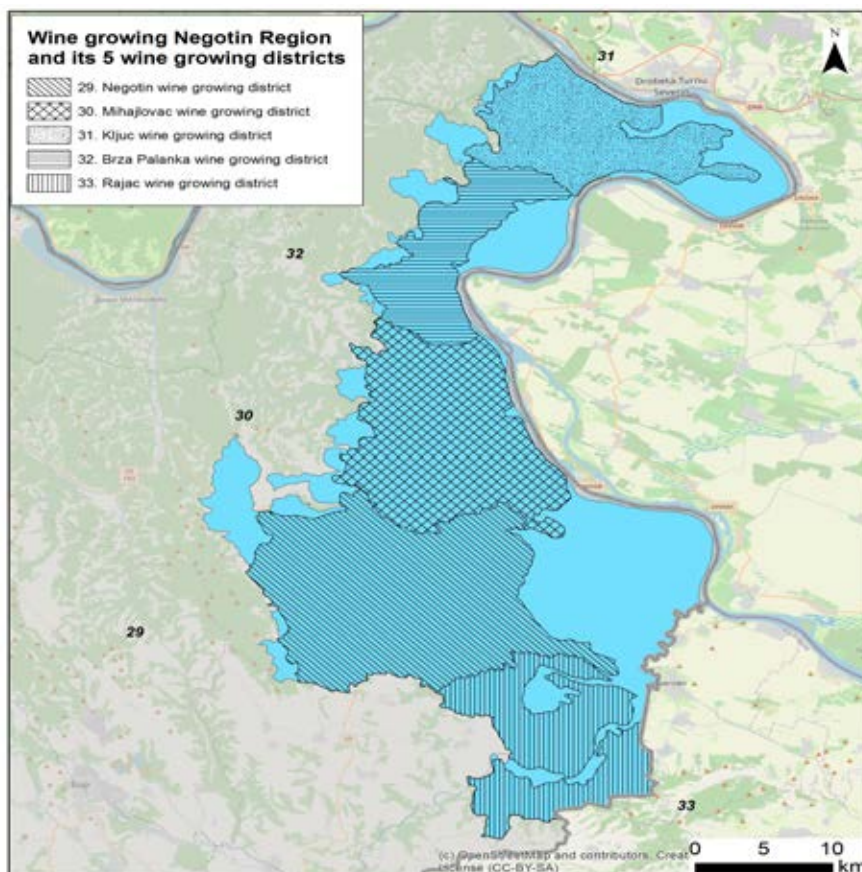
## **Study area**

Wine growing Region of Negotin belongs to the eastern part of the Central Serbia wine growing unit. It stretches along the Danube, from Sip to the three-border Serbian-Romanian-Bulgarian border. In the east, it reaches the border with Bulgaria, while the southern border is formed by the headwaters

of the Sikol and Čubran rivers, left tributaries of the Timok. The area belongs to the Bor District (22°13'30" and 22°46'30" eastern longitude, 44°2' and 44°39' northern latitudes). Wine growing region of Negotin has 5 wine growing districts: Ključ (123.42 km<sup>2</sup>, municipality of Kladovo), Brza Palanka (95.13 km<sup>2</sup>, municipality of Kladovo), Mihajlovac (196.67 km<sup>2</sup>, municipality of Negotin), wine growing district of Negotin (279.42 km<sup>2</sup>, municipality of Negotin) and Rogljevo-Rajac (134.74 km<sup>2</sup>, municipality of Negotin).

The main road routes go through Negotin, Belgrade - Požarevac - Majdanpek - Negotin and Niš - Zaječar - Negotin. The only railway route is Prahovo - Zaječar - Knjaževac - Niš.

**Figure 1.** Geographical location of wine growing districts in the Negotin wine growing region



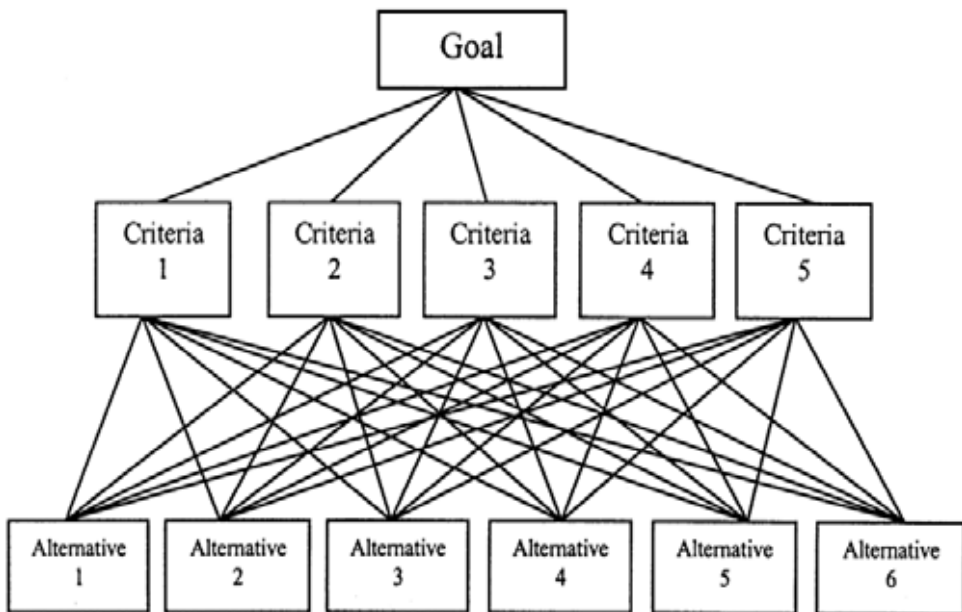
Source: Elaborated by authors.

## Methodology

Analytical-hierarchical process (AHP method) is being used for potential evaluation. The analytical hierarchy process was introduced by Thomas Saaty (1980) for complex decision making. The AHP method helps in looking at the subjective and objective aspects of a decision, reducing complex decisions, comparing pairs and synthesizing the results. The AHP method is known as a level analysis method that seeks to decompose problems into a branched structure and establish a level of class structure, with mutual influence, allowing more accurate decisions on complex issues (Crouch, Ritchie, 2005).

This method allows comparing two items of each level with different measurements and setting up pairwise comparison matrices to calculate a vector, which represents the priority of significant elements at a certain level of structure (Saaty, 2008).

**Figure 2.** Example of a hierarchical model in AHP



Source: Saaty (1980)

For research purposes, the AHP method is implemented within GIS, and defines weights (importances) for the selected criteria (Al-shabeeb, 2016), including effective visualization of the output.

### **Results and conclusion**

Based on Jakšić et al., (2015), a total of 56 wines with geographical origin (referred to the wine label)<sup>4</sup> were registered in: Negotin wine growing district (15), Mihajlovac (18), Ključ (2) and Rajac-Rogljjevo wine growing district (21).

In Negotin wine growing region there are a total of 69 settlements. However, only those where grapes are produced are included in this analysis. In the paper, 5 categories are distinguished that define the potential: very poor category, poor category, moderate category, good category and very good category. The fifth category, very good category, is not present for this vineyard area. It is dominant in wine-growing regions that have very well developed all the elements of model 6A. The largest areas are in the first and second categories: poor category with a share of 44.76% and very poor category with a total share of 39.25%. The smallest share has areas in the moderate category category with 15.07% and good category with 0.9%. Spatially, it includes the following settlements.

*Very Poor Category* is registered in the settlements: Sikole, Tranjane, Šarkamen, Jabukovac, Štubik, Rečka and Podvrška.

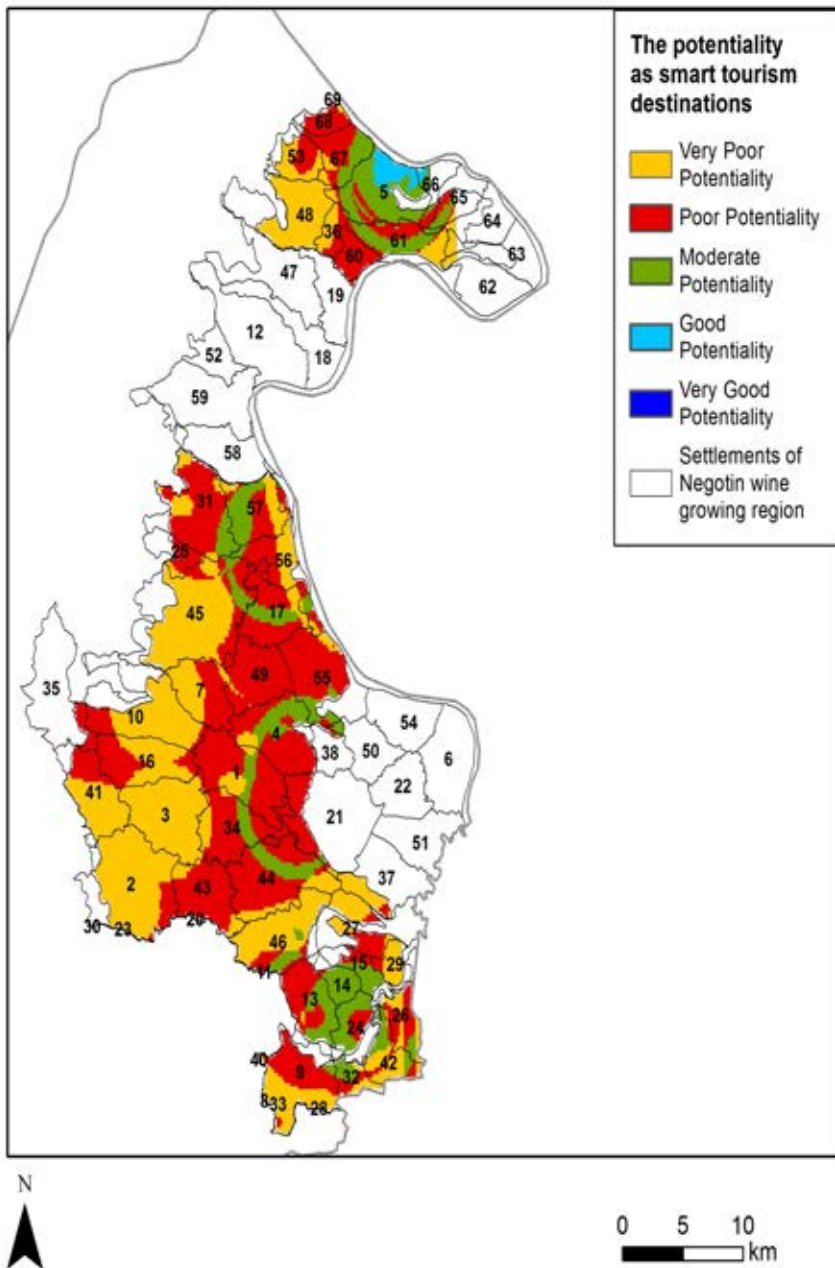
*Poor Category* is registered in settlements: Urovica, Slatina, Mala Kamenica, Dupljane, Dušanovac, Vidrovac, Jasenica, Karbulovo, Brestovac, Čubra, Bracevac, Davidovac, Milutinovac,

Moderate Category is registered in settlements: Kladovo, Smedovac, Rogljjevo, Rajac, Crnomasnica Good Category is registered only in Kladovo settlement.

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4 According to the same authors (2015), these wines are produced in a total of 11 wineries: Ključ wine growing district (1), Rajac-Rogljjevo wine growing district (6), Mihajlovac wine growing district (2) and Negotin wine growing district (2).

**Figure 3.** *Potential Map for smart tourist destinations in Negotin wine growing region*



Source: Elaborated by authors

### The settlements of Negotin wine growing region

1.	Jasenica	24.	Rajac	47.	Velika Kamenica
2.	Sikole	25.	Vratna	48.	Podvrška
3.	Trnjane	26.	Kovilovo	49.	Dupljane
4.	Vidrovac	27.	Mokranje	50.	Samarinovac
5.	Kladovo	28.	Šipikovo	51.	Bukovče
6.	Radujevac	29.	Veljkovo	52.	Reka
7.	Malajnica	30.	Glogovica	53.	Manastirica
8.	Veliki Jasenovac	31.	Urovica	54.	Prahovo
9.	Bračevac	32.	Crnomasnica	55.	Dušanovac
10.	Štubik	33.	Mali Jasenovac	56.	Mihajlovac
11.	Klenovac	34.	Karbulovo	57.	Slatina
12.	Grabovica	35.	Plavna	58.	Kupužište
13.	Tamnič	36.	Rečica	59.	Brza Palanka
14.	Smedovac	37.	Kobišnica	60.	Milutinovac
15.	Rogljevo	38.	Miloševo	61.	Vajuga
16.	Šarkamen	39.	Tabakovac	62.	Korbovo
17.	Mala Kamenica	40.	Brusnik	63.	Rtkovo
18.	Ljubičevac	41.	Popovica	64.	Velika Vrbica
19.	Velesnica	42.	Aleksandrovac	65.	Mala Vrbica
20.	Metriš	43.	Brestovac	66.	Kostol
21.	Negotin	44.	Čubra	67.	Kladušnica
22.	Srbovo	45.	Jabukovac	68.	Davidovac
23.	Salaš	46.	Rečka	69.	Novi Sip

Through this project, the initiation and implementation of “smart villages” builds on the existing resources by further improving them by finding new opportunities for survival and development.

Numerous advantages and the improvement of rural areas can contribute to the development of wine tourism in wine growing region of Negotin through the application of digital technology: by improving the production process, increasing the number of tourists, introducing wine products to end users, increasing supply and demand. As well as further development directions - provision of intelligent platforms for gathering and distributing information among key stakeholders, efficiency and effectiveness of tourism resource

allocation and integration of tourism suppliers to ensure that tourism revenues are evenly distributed within the local community.

The change of traditional management structures through information technology in the field of rural development is a prerequisite for effective social-economic transformation of rural areas.

It is important to emphasize that the model of “smart villages” in Serbia and in the wine-growing region of Negotin, is still in its initial phase and that the further focus of the research is related on:

1. For the development of small wineries, households and farms engaged in viticulture and winemaking, producing various viticultural products: wines, compotes, sweets, grape seed oils, home-made juices, aromatic and medicinal molasses, as well as other specialized grape products and vines.
2. Connecting local communities and producers for product marketing
3. Product placement on the premises and local markets (e.g. the closest cities),
4. Education for the application of digital technology,
5. Organization of public transport,
6. Establishing a private-public partnership
7. Starting local initiatives, support for the establishment of wine cooperatives,
8. Development and branding of wine events and traditions, authentic to the village, etc.

## **Conclusion**

Wine tourism has been expanding in the Republic of Serbia in recent years. It is complementary with event tourism and rural tourism. The income that the destination generates comes from the sale of wine itself, as well as from all other expenses that tourists have during their stay in the destination during their staying. It is also complementary in development with agriculture, trade, development of economic and cultural activities, etc. The assessment is that its development leaves positive multiplied effects on the tourism destination where it is developed.



The Negotin region has a long tradition of wine development and viticulture. The assessment is that with the development of wine tourism, the development of overall tourism would be enhanced, and the effects of the development of tourism would be multiplied on the development of other economic branches. In general, it means agriculture, trade, construction branches, transport, etc. These positive impacts would also be damaged in non-economic activities, because wine tourism is complementary to event tourism, which in turn is complementary to cultural activities in the tourist destination. Based on this, it can be seen that the development of tourism would actually be an incentive for the development of the entire Negotin region, which for many years was unfairly neglected in the overall economic development of the country. In this sense, it is necessary to invest in marketing activities in order to connect supply and demand with these types of tourism.

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