

# WINE TOURISM AND SUSTAINABLE RURAL DEVELOPMENT IN THE DANUBE BASIN AREA IN SERBIA

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## Abstract

*Rural areas in the Danube basin area in Serbia facing serious economic and social difficulties, caused by the transition, the economic crisis and the processes of migration and depopulation, which are particularly evident in the area of the Lower Danube. Danube is known for its centuries-long tradition of producing grapes and quality wines, which is now concentrated in the family wineries. Wine tourism, based on the production of quality wines of protected geographical indications in conjunction with the production of traditional local food and craft products, cultural tourism and nature-based tourism can make a significant contribution to sustainable territorial development. The authors analyze the possibilities and constraints for the development of wine tourism in the wine regions of the Danube basin area, included in the official wine routes of the Tourist Organization of Serbia.*

**Key words:** vineyards, wineries, quality wines, wine tourism, wine routes, sustainable rural development.

## Introduction

Due to favorable natural conditions and the centuries-long tradition in the production of grapes and wines, some of the most famous wine growing regions / vineyard areas are located along the Danube, forming the backbone of the recently established **Serbian wine routes**: 1) **Fruška Gora Wine Route** (Fruška Gora vineyard area of Srem wine-growing region), 2) **Smederevo Wine Route** (Smederevo vineyard area of Belgrade wine growing-region, including Brani evo vineyard areas of Mlava wine-growing region, and Krnjevo vineyard area of Šumadija wine-growing region, in the vicinity) and 3) **Negotin Wine Route** (Mihajlovac, Negotin i Rajac vineyard areas of Negotinska krajina wine-growing region) (MPŠV, 2011; TOS, 2011).

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Rural areas in the Danube basin in Serbia, including above-mentioned wine production areas, are facing serious economic and social difficulties, caused by the economic crises and transition as well as the processes of migration and depopulation that are particularly severe in the area of the Lower Danube. Taking these facts into account, the Government of the Republic of Serbia in the Danube Strategy Contribution Paper has pledged to enhance agricultural production, encourage diversification of the rural economy through the development of tourism and local crafts, build capacities of the local community and promote the SMEs as the pillars of the local economic development (RS Government, 2010).

According to UN Agenda 21, improving farm production and farming systems through diversification of farm and non-farm employment and infrastructure development is one of the key element of Sustainable Agriculture and Rural Development (SARD) concept. Rural non-farm (RNF) activities include: farm commodity processing, recreation and tourism, light village-based manufacturing, etc., (UN, 1992).

**Wine tourism** as a form of agritourism (Phillip et al., 2010), special interest tourism (Hall, 1998) and cultural tourism (Asero, Patti, 2009), based primarily on the production of quality labeled wines in small family wineries, in conjunction with typical quality food and craft products, and nature-based tourism, including eco-tourism in protected areas in the vicinity, can make a significant contribution to sustainable territorial development of local communities in the Danube basin area in Serbia.

The early researches in wine tourism were developed in the 1990s, but have not resulted in a unique definition. A conceptual definition of wine tourism that is considered as the most suitable from wine tourist's point of view is that of Hall (1996): *wine tourism has been referred to visitation to vineyards, wineries, wine festivals and wine shows for which grape wine tasting and/or experiencing the attributes of the wine region are the prime motivating factors for visitors.*

In Europe, wine tourism has been largely developed in the form of official **wine routes**. The concept of a wine route incorporates bounded space in the form of an often officially demarcated wine region that proclaims unique attributes for its wines and cultural heritage - *the nature of the grapes and the wines produced, the soils and climate that give them distinctive character and the cultural heritage that nurtured them* (Hall et al., 2000). Hall and Mitchell (2002) use the term of *touristic terroir* to describe *the unique combination of the physical, cultural and natural environment that gives each region its distinctive tourist appeal*. The results of research, conducted in Canada between long distance wine tourists, confirmed that wine was often not the sole or main motivator for a planned visit to wine regions

and, even when wine was the main attraction, the wine tourists, including the most wine-oriented category of *wine lovers*, preferred destinations that have *beautiful scenery* and *lots to see and do*, combining following interdependent sets of critical demand factors for wine tourism destinations:

- *core wine product* (features related to famous wines, wineries, winery staff, wine festivals, and group tours at wineries),
- *essential destination features* (attractive scenery, pleasant climate, moderately priced accommodation, easy to obtain information and well signposted wine trails, lots to see and do, and opportunities for outdoor recreation), and related
- *cultural experiences* (unique accommodation with regional character, fine dining and gourmet restaurants, traditional wine villages, specialty shops or markets selling local farm produce) (Getz, Brown, 2006).

**Core wine product features** are related to "winescape" - vineyards, wineries and wines (Telfer, 2001). Direct sales of quality wines as well as typical local food, especially those with quality labels, strengthen the image of the wine region and, at the same time, increase the market niche demand for quality wine and food in the country and abroad, building brand loyalty among visitors (Bruwer, 2003), and contributing to the rise of farm income, promotion of the tourist offer, entrepreneurship development and employment generation in the regional economy (Popovi et al., 2009).

And although wineries are the core attraction, they cannot stand alone (Getz, 2000). **Cultural and natural values of the region**, including wine villages and ethno-restaurants with high quality typical local food and small shops with traditional crafts are necessary for complement of the wine tourism offer. Authenticity, regional culture and gastronomy are closely linked to wine tourism, particularly having in mind wine tourist segments other than *wine lovers* and *neophytes* (young, potential wine lovers), known as the *occasional wine tourists* and the *hangers-on*. For these wine tourist categories, winery visit is not the primarily motivation for visiting the wine region but they usually take part in a variety of activities in the wine region and, in that way, contribute to regional growth and employment (Alebaiki, Iakovidou, 2011).

Grape vine growing (natural and human controlled elements of terroir), wine production and labeling, provision of skilled and pleasant winery staff, excellent in knowledge of grape varieties, wine and wine tasting and natural values and cultural heritage of the wine region, and good accommodation facilities for reception of tourist groups are the necessary precondition for wine producing farm to diversify to wine tourism. The success stories in Europe have been created

around a *nucleus of dynamic and innovative farms* which are prepared to investment money and human capital into the initiative (Gatti, Incerti, 1997). Wine routes realize a *model of district* that attributes a remarkable weight to the social and cultural factors in the processes of development (Asero, Patti, 2009)<sup>2</sup>.

Due to the multi-dimensional nature of wine tourism, there are several stakeholders that should be recognized and networked within collaborative associations/clusters (farms, wineries, tourism destination organizations, private and public enterprises and associations, including environmental NGO, protected area management and cultural heritage institutions, government and local administration), and included in the process of wine tourism destination development and marketing planning. Public investment support to farm for grape wine production and labeling and diversification to wine tourism as well as for natural value and cultural heritage protection, and development of local infrastructure and special wine tourism products (wine museums, wine villages, etc.), is essential, having in mind strong mutual leverage effects of wine, nature/eco and cultural tourism, agriculture and services to sustainable development of wine regions. In European wine regions, especially Mediterranean, wine is deeply connected with regional culture, history and tradition rooted in antiquity and that's the reason of considering it as one of the pillars of cultural tourism and including it in the cultural routes. Council of Europe support projects of wine routes development under Cultural Routes Programme.

### **Wine routes of the Danube Basin area of Serbia**

The viticulture and wine production in Serbia began not only to recover but to make a big shift from the mass production of low-quality wines on large state-owned combines to the production of limited series of quality wine in small and medium-sized family wineries, after a sharp decline in production and exports of wine during the 80's and 90's. High-quality and quality wines now make up about 35% of total wine production in the country. Changes in the structure of wine export, however, are much slower. In the period of 2004-2007 the exports accounted for only 5% of the country's wine production, with only 10% of the exported amount was placed in bottles, while the remainder consisted of wine in bulk, resulting in twice the average export price lower than the average price in the global wine market in this period (Vlahovi et al., 2009).

In a highly competitive European and world markets, small and medium wineries need time and inventive marketing strategies for serious progress in changing

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<sup>2</sup> According to Beccatini (1990), industrial district is a socio-economic entity, which is characterized by the active presence of both a community of people and a population of firms in one naturally and historically bounded area.

export structure. Wine tourism (and sales on the cellar door) is one of the best ways for their market promotion, especially in the Danube basin area, where there are real opportunities for the development of wine tourism within regional Danubian cultural and recreational tourist routes.

As highlighted in the introduction, in the Danube basin area are concentrated some of the best known wine-growing regions / vineyards of Serbia, which were, by the Tourist Organization of Serbia, officially included in the wine regions and wine routes: 1) Fruška Gora vineyard area of Srem wine- growing region (*Fruška Gora Wine Route – In the Reflection of the Danube*); 2) Smederevo vineyard area of Belgrade wine-growing region, including Brani evo vineyard areas of Mlava wine-growing region, and Krnjevo vineyard area of Šumadija wine-growing region, in the vicinity (*Golden Hill - Smederevo Wine Route*) and 3) Mihajlovac, Negotin i Rajac vineyard areas of Negotinska krajina wine-growing region (*The Rajac Pimnice - Negotin Wine Route*) (MPŠV, 2011; TOS, 2011) (Figure 1).

**Figure 1.** Wine Routes in the Danube basin area in Serbia



**Source:** Adapted from:

[http://www.srbija.travel/download/brosure/karta\\_putevi\\_vina\\_2izdanje.pdf](http://www.srbija.travel/download/brosure/karta_putevi_vina_2izdanje.pdf)

Pillars of wine tourism in these regions were selected wineries, which, with their business performance, knowledge and experience, technology and innovation, should encourage more followers in the sector and other stakeholders in the Danube basin area for the development of entrepreneurship and diversification. Some of them will be mentioned wider in the paper, as representatives of the wine roads observed: *Winery Bononia* – Banoštor (Wine Route Fruška Gora), *Small Cellar Radovanovi* - Krnjevo and *Winery Živkovi* - Kli evac (Wine Route Smederevo) and *Matalj Winery* - Negotin (Wine Route Negotin).

The subject of analysis in the following sections of the paper will be the main elements of the tourist offer at selected wine regions in the Danube basin area in Serbia, in order to identify the main potentials and constraints for the development of wine tourism and its contribution to sustainable rural development, as well as measures to support the promotion of tourism development in the study areas.

### **Core wine product features - Vineyards, Wines and Wineries**

#### *Vineyards*

European quality wines are traditionally linked to the place of origin by a set of natural factors and the producer skills, integrated under a single umbrella term - *terroir*. According to the French Wine Guide (2012), *a terroir is a group of vineyards (or even vines) from the same region, belonging to a specific appellation, and sharing the same type of soil, weather conditions, grapes and wine making savoir-faire, which contribute to give its specific personality to the wine*. Natural factors that are believed to largely define the *terroir* are:

- Geological and pedological characteristics of the terrain on which the vineyard was planted (geological basis and soil types in terms of the required level of fertility, drainage and ability to retain heat),
- Climate of wine regions, vineyard areas and vineyard sites (temperature, precipitation, insolation, frost, drought, wind, hail), and
- Relief, including elevation, slope, aspect, and specific topographic features of vineyard surrounding (bodies of water, forest, hill, etc.).

**Soil.** Each era in the geological timescale has a specific impact on the development of high-quality vineyards and the characteristics of wine-growing regions may be classified according to their geological origin (Fanet, 2004). Economic significance of viticulture is determined by, among other things, the circumstance that the vines can be successfully grown on terrains that are not suitable for the profitable production of other crops. This relates primarily to a number of light, powdery, sandy and gravelly soils, sand, calcareous soils on

marly substrates, as well as the eutric cambisols, terra rossa, alluvial and delluvial soils (Popovi et al., 2011). Loose and permeable soil, able to retain heat, and reflect light and adequately provided with essential nutrients and trace elements (nitrogen, phosphorus, potassium, magnesium, calcium, iron, sulfur) is the key factor of vineyard quality. The soil composition of vineyards in the Danube basin area ensures the production of high quality wines.

Fruška gora belongs to the first pedo-geographical region of Serbia and, due to diversity of its geological materials, it is considered as a mirror of geological past. The vineyards are on heterogeneous sedimentary series soil of Srem loess plateau, where eolian loess deposits are alternating with fossil pedological horizons, slope sediments and fluvial gravels and sands. The most common are the following types of vineyard soil: pararendzinas on the marl and loess chernozem eroded and browned, and eutric cambisols, eroded and skeletoidal. Krnjevo, Smederevo, and Brani evo vineyard areas, as well as Mihajlovac, Negotin and Rajac vineyard areas are located in the second pedo-geographical region. Neogene lake sediments (sand, gravel, clay marl, clay and coal) as the most common parent materials decisively influenced the structure of the soil cover. On heavy lake sediments are present vertisol and metamorphic vertisol (Negotin and Rajac vineyard areas), and on the lighter it alternate eutric cambisols (the only soil type in Krnjevo vineyard area, and dominant in Smederevo, and Brani evo vineyard areas). There are vertisol, eutric cambisol and terra rossa complexes in Negotin vineyard area. Brown soils are the second most abundant in Brani evo vineyard area, just behind the eutric cambisols, while in complexes with acid and podzolic soils, are dominant in Mihajlovac and Negotin vineyards. In Brani evo area, nearby Veliko Brdo (324 m), in the northern part of Boževac beam, due to the proximity and position of Ram - Zatonje sands and Koshava wind, loess is mixed with sand and those deposits are designated as aeolian loess sands (Kuzman et al., 2009). Vineyards on the sand are also present in Negotin vineyard area (Kobišnica and Prahovo-Radujevac plateaus). In the river valleys there is recent alluvium (Dini , 1997; MPŠV, 2008, RSPŠV, 1976).

**Climate.** The vine is a plant of temperate belt, which requires a specific temperature conditions during the different phases of the annual cycle (beginning of physiological processes on 10 °C, flowering 17-20 °C, maturing 27 + °C) and a certain amount of water (about 690 mm per year) and solar light (1300-1500 hours during the growing season, April - October) (MacNeil, 2001). Climatic features at the vineyard area level (in this case at a wine region level as geographic area of a wine road), along with the vineyard site mesoclimate and particular vine grape row microclimate characteristics, play a major role in selecting the grape varieties and defining the overall *terroir* of wine, originating from a specific location. In continental climate conditions in the regions Fruška

gora and Negotinska Krajina, and moderate-continental climate in the Middle Danube region, vines has favorable conditions for development - four seasons shift, hot summers and cold winters, enough sunlight and considerable diurnal temperature variation, which provide good balance of acids and sugars in grapes and wine. However, vine is also faced with certain weather disadvantages:

- appearance of frost (with fewer days with snow cover) in the winter and early spring (absolute minimum temperature recorded in January, ranging from -23.7 °C in Veliko Gradiste to -28.9 °C in Smederevska Palanka),
- torrential rainfall, accompanied by hail and wind storm in late spring and summer, as well as
- more intensive hot waves and drought - the consequences of climate change that requires irrigation, especially in Negotinska Krajina (Table 1).

**Table 1.** Climatic features wine regions in the Danube basin area, 1981-2010

Met. station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
<b>MEAN TEMPERATURE °C</b>													
<i>Novi Sad</i>	0,2	1,6	6,4	11,8	17,3	20,1	21,9	21,6	16,9	11,8	5,9	1,5	11,4
<i>Sm. Palanka</i>	0,7	2,1	6,5	11,8	17,0	20,1	22,0	21,6	16,8	11,7	6,2	1,9	11,5
<i>Vel. Gradište</i>	0,1	1,5	6,2	11,8	17,0	19,9	21,9	21,5	16,8	11,7	6,0	1,4	11,3
<i>Negotin</i>	0,3	1,9	6,6	12,2	17,7	21,3	23,5	22,8	17,6	11,6	5,5	1,1	11,8
<b>PRECIPITATION, mm</b>													
<i>Novi Sad</i>	39,1	31,4	42,5	49,2	63,0	91,4	64,3	57,5	53,8	52,7	53,8	48,8	647,3
<i>Sm. Palanka</i>	42,4	39,2	43,6	50,1	54,3	78,7	60,5	58,9	56,4	51,2	50,0	51,8	637,2
<i>Vel. Gradište</i>	45,0	42,2	41,5	57,2	59,8	81,6	61,4	55,9	57,5	51,8	48,4	50,7	653,0
<i>Negotin</i>	41,8	44,1	47,6	53,5	50,8	59,2	49,4	47,5	45,4	49,5	58,4	66,4	613,6
<b>INSOLATION – average, hours</b>													
<i>Novi Sad</i>	64,8	99,0	156,4	190,1	250,8	269,4	303,6	285,8	205,7	158,9	92,4	58,4	2135,3
<i>Sm. Palanka</i>	78,1	107,6	156,3	188,8	242,4	263,9	299,1	281,8	208,7	166,1	104,8	70,2	2167,8
<i>Vel. Gradište</i>	67,2	95,5	151,8	183,5	235,6	257,0	291,3	280,5	203,9	156,8	92,1	58,6	2073,8
<i>Negotin</i>	80,2	99,0	141,3	185,5	243,1	279,8	310,1	284,1	208,4	139,0	76,8	62,0	2109,2
<b>DAYS WITH FROST – average</b>													
<i>Novi Sad</i>	22	18	10	2	0	0	0	0	0	2	9	18	81
<i>Sm. Palanka</i>	22	18	11	2	0	0	0	0	0	3	10	18	83
<i>Vel. Gradište</i>	23	19	11	2	0	0	0	0	0	2	9	18	84
<i>Negotin</i>	22	18	11	1	0	0	0	0	0	2	9	19	82
<b>TROPIC DAYS – average</b>													
<i>Novi Sad</i>	0	0	0	0	1	6	11	11	2	0	0	0	32
<i>Sm. Palanka</i>	0	0	0	0	2	7	13	13	3	0	0	0	37
<i>Vel. Gradište</i>	0	0	0	0	1	7	13	13	2	0	0	0	37
<i>Negotin</i>	0	0	0	0	2	8	16	16	3	0	0	0	44

**Source:** RHMZS, (2012).

Due to the large annual climate fluctuations, *vintage* is gaining in importance, especially in the production and marketing of high-quality wines.

**Relief.** Orographic characteristics of vineyard grounds (elevation, slope, and aspect, the degree of relief dissection), and characteristics of the vineyard site (near



the big river / lake, close to the forest complex, hilltop, etc.) affect climate of the vineyard area and microclimate of the vineyard site. The hills and hillsides with a slope of south, southeast and southwest aspects, and flat plateaus on elevated terrain provide more sunlight and excessive water runoff, water mirror of the river /lake nearby mitigates extreme temperatures and increases the intensity of sunlight, and forest reduces harmful effects of wind.

The vineyard grounds of Fruška gora are on plateaus and slight slopes of different aspects, which extend to the north toward the Danube and south toward Srem plain, at elevations of 85 - 350 m. Vineyard terrains between 180-200 m above sea level are usually flattened plateaus, suitable for large plantations, while the higher grounds have fractured configuration.

Krnjevo vineyards are located on hills with slight slopes and altitude of 120-260 m, between the valleys of the rivers Morava and Jasenica. The hilly, slightly angled relief altitude of 100-273 m is also typical for Smederevo vineyard area. Brani evo vineyard area stretches Pek river watershed, along the right bank of the Danube, from Kostolac to Golubac, where the terrain is mainly flat, with low terraces in Stig plain altitude of 110-240 m, and clearly expressed plateau on Sopot and Boževac beam, that gradually descend to the Mlava river.

The vineyard areas of Negotinska Krajina cover alluvial plains of Danube (Danube terrace, Prahovo – Radujevac plateau) and Timok river valleys and Negotin Plain (the town of Negotin fringe and Kobišnica plateau) at an altitude up to 150 meters, and the vast hilly area toward the central part of Negotin municipality, mostly in altitude of 150-200 m (low hills). This area is intersected by numerous river valleys, with slight slopes of predominantly southeast aspect.

Among the factors that may have an impact on *terroir*, which is controlled by the grape and wine producers are certain *inputs*, particularly the choice of grape varieties, and *techniques* of grape growing and vinification.

**Grape varieties.** Climate, soil and topography are of decisive influence to the decision of which grape variety to plant in the vineyard area. Fruška gora, as an area with expressed continental climate is suitable for growing high-quality white wine varieties. The grape varieties recommended by the competent ministry are those for white wines: Italian Riesling, Rhine Riesling, Pinot Blanc, Sémillon, Sauvignon, Traminer Red, Muscat Ottonel, Neoplanta, Sirmium, Župljanka and Chardonnay. According to 2008 data (MPŠV, 2008), the white wine varieties are the most common in the vineyards of Fruška gora vineyard area – Riesling Italian (31.7%) and Chardonnay (25.5%).

Varieties recommended for agro ecological conditions of Smederevo and Krnjevo vineyards include: varieties for red wines – Prokupac, Gamay Noir and Pinot Noir; the variety of white wines - Riesling Italian and Smederevka; and varieties for table grapes - Muscat Hamburg and Afus-ali. In Smederevo vineyard area white wine varieties dominate, led by Smederevka (40.1%), which is followed by Rkatsiteli (18.5%) and Riesling Italian (12.4%). In Krnjevo vineyards the largest share has red wine variety Cabernet Sauvignon (28.6%). The following are white wine varieties: Chardonnay (22.3%) and Smederevka (12.2%).

In Brani evo vineyard area, there are recommended grape varieties for red wines: Prokupac, Gamay Noir, Cabernet Sauvignon and Merlot, varieties of white wines: Plovdina, Smederevka and Riesling Italian, and varieties of table grapes: Muscat Hamburg and Afus-ali. The most present variety in the vineyards is the table grape variety Muscat Hamburg, with the share of 29.5%. It is followed by white wine variety - Smederevka (8.2%) and variety for red wines - Prokupac (8%).

Widest range of recommended varieties is available to winegrowers of Negotinska Krajina region where varieties of red wine is traditionally prevailing, but in recent decades the increased share of white wine varieties is observed. The most present grape varieties in the Mihajlovac vineyard area are: Riesling Italian (16.4%), Gamay Noir (11.1%), Vranac (9.9%) and Cabernet Sauvignon (9.3%); in Negotin vineyard area: Rhine Riesling (32.5%), Riesling Italian (26.2%) and Chardonnay (23.8%), and in the Rajac vineyards area: Rhine Riesling (20.2%), Cabernet Sauvignon (18.5%) and Gamay Noir (14.3%).

Of the varieties of red wines for growing in Mihajlovac, Negotin and Rajac vineyard areas are recommended: Alicante Bouschet, Pinot Noir, Franconia, Gamay Noir, Gamay Tenturier, Cabernet Sauvignon, Cabernet Franc, Merlot, Muscat Hamburg, Prokupac, Saperavi, Vranac, and Za inak, and among the white wine varieties: Pinot Blanc, Chardonnay, Riesling Emerald, Muscat Ottonel, Muscat Frontignan, Neoplanta, Rivaner (in Negotin vineyard areas), Italian Riesling, Rhine Riesling (in Negotin vineyard area), Rkatsiteli, Sémillon, Silvaner, Sirmium, Smederevka, Sauvignon, Shasselas Bouvier, Shasselas, Traminer Red and Župljanka (Mihajlovac and Rajac vineyard areas) (MPŠV, 2008).

Producers in selecting varieties take account of these recommendations, but, within these frames the decisions related to varieties, further harmonize with the environmental conditions on the particular vineyard site<sup>3</sup>. Thus Bononia winery own two vineyards on Fruška gora, the total area of 7 hectares. One of them is

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<sup>3</sup> <http://www.vinarijabononia.com/>, <http://www.podrumradovanovic.rs>, <http://www.mataljvinarija.rs/imanje.html>, <http://www.blic.rs/Vesti/Srbija/32235/Vina-iz-Klicevca-pili-su-i-stari-Rimljani>

located in Banoštor, on slight slopes near the Danube, and the other on the plateau above the Danube, where, using microclimate benefits of light reflected from the water surface, is successfully grown varieties of white wines: Chardonnay, Riesling Italian and Župljanka, and variety for red wines: Franconia, Merlot, and Cabernet Sauvignon and Muscat Hamburg as a variety of table grapes. The plantations have been recently extended with Rhine Riesling.

On the southeastern aspect hills in Krnjevo vineyard area, Cellar Radovanovi has total vineyard area of 22 ha, where following wine varieties dominates: Rhine Riesling, Chardonnay, Pinot Blanc, Pinot Gris and Pinot Noir, Cabernet Sauvignon, Cabernet Franc and Merlot. On loess sand around Kli evac in Brani evo vineyard area, where the plain Stig descends to the Danube, Živkovi winery a few years ago successfully restored family vineyard with the Cabernet Sauvignon, Merlot the Chardonnay.

And, as representative of the famous Krajina vineyards, winery Matalj is represented here with its two vineyards. The Danube terrace is a vineyard of the total area of 12 hectares and is located in Mihajlovac vineyard area, on the plateau above the Danube, the altitude of 120 m. On the river banks consisted mostly of gravels, sand and clay, white wine varieties Chardonnay and Sauvignon Blanc and red grape variety Merlot are grown. Specific microclimate, with a large number of sunny days and cool nights in autumn provides optimum ripening while preserving the acid, especially important for the quality of white wine varieties. Vineyard Kremenja a, total area of 5 ha, is located in Rajac vineyard area, at an altitude of 220-250 m, in the hinterland of mountains Deli Jovan and Stol. Protected from cold winds, with the plenty of sun in the summer and warm and dry autumn, on the complex of eutric cambisols and vertisols with lots of stone, this location is particularly suitable for late ripening of red grape varieties, Cabernet Sauvignon and Merlot.

**Grape and wine making savoir-faire.** Apart from the selection of varieties, it is very important to respect natural conditions during entire process of growing grapes and producing wine. Producers adapt the technique of grape and wine production to the characteristics of each vineyard parcel. According to the presentation of their wines<sup>4</sup>, observed vintners are trying, using their own family traditions and skills, to give each wine a personal touch.

Precision agriculture has proved to be particularly suitable for application in viticulture. Combining different management approaches, including zonal and adaptive management, precision viticulture accomplish a variety of production

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<sup>4</sup> Ibid.

practices (trellis design, pruning practices, irrigation and fertilizer application schedules, pest management, selective harvest based on timing of ripening, etc.), to the specific natural conditions and grape vine needs in a particular location. This production technique is particularly suited for use in integrated and organic wine grape production. Popularity of eco-wines in recent years in Europe is growing, and with it, the area under these systems of vine grape growing (Birkenštok, 2012). The Center for Organic Farming in Negotin municipality promotes Negotinska Krajina as an ideal environment for healthy food production using organic method, and it certainly is suitable for all low-intensity production systems, including integrated and organic viticulture, particularly in areas that gravitate NP "erdap" (Nikoli, Popovi, 2010).

Vinification process also (length of maceration and time in contact with lees, temperature during fermentation, as well as processes like micro-oxygenation, chaptalization, clarification with fining agents and reverse osmosis - Robinson, 2006) must be tailored to the specific characteristics of the grapes obtained from specific locations. According to Fanet (2004), nature provides the raw material, but only people know how to turn it into something exceptional. The longer tradition of producer in the production of grapes and wine is in a given area, it is likely that he has appropriate grape and wine making savoir-faire, adapted to particular vineyard site. The result is wine that fully expresses the wine *terroir*.

### Wine

Small family wineries are oriented to production of limited quantities of terroir-driven high-quality and quality wines. While there is considerable disagreement among experts regarding factors and impact of *terroir* on a distinctive quality of wines (Spielmann, Gélinas-Chebat, 2011; Fanet, 2004), this concept is in the basis of the systems of geographical indications and names of origin protection for wines and other agricultural products and foodstuffs around the world (the EU Protected Geographical Indication/Protected Designation of Origin – PGI/PDO, French Appellation d'origine contrôlée - AOC system, etc., including Serbia<sup>5</sup>). It is especially important for the marketing of wine in the wine tourism regions.

In Serbia, in producer year 2011/2012, 41 wineries produce 108 wines with geographical indications of origin. From Fruška gora vineyard area are eight of them, with 28 wines, and among these eight producers are two wineries included in the Fruška gora Wine Route: *Vinum* (wines: Sauvignon Blanc and Frankovka) and *Winery Bononia* (wines: Riesling Italian, Chardonnay and Merlot). From Krnjevo vineyard area on this list is a *Small Cellar Radovanovi* (wines:

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<sup>5</sup> See MAFWM form of Elaborate of production of wines with geographical indications, [http://www.mpt.gov.rs/articles/view/119/505/index.html?menu\\_id=23](http://www.mpt.gov.rs/articles/view/119/505/index.html?menu_id=23).

Chardonnay, Cabernet Sauvignon, Rhine Riesling), and from Smederevo vineyard area *Janko Cellar* (wines: Smederevka, Mission and Adut), both involved in the Smederevo Wine Route. Another two wineries (4 wines) in the Mihajlovac vineyard area and three wineries (4 wines) in the Rajac vineyard area produce wines with geographical indications of origin (MPŠV, 2012).

Wine producers and their associations, especially those involved in wine tourism, are aware of the importance of authentic wines to differentiate among highly competitive producers of known international variety wines. Differentiation in the market is achieved by increasing the number of **wines with geographical indications** as well as the restoration of plantations with local indigenous and old domesticated varieties of grapes and the production of **traditional local wines**. Thus in Fruška gora vineyards today Vranac and Portugiser are grown, and in the wineries you can find again the famous aromatized Ausbruch wine, Bermet and young wine Portugiser. Winegrowers in Smederevo vineyards are forcing Smederevka, and in Negotinska Krajina the restoration of plantations of Braghina (Matalj wineries) and Tamjanika Red (Agricultural School in Bukovo, founded in the 1887th at the Monastery Bukovo, Negotin municipality). Winemakers Association of Negotinska Krajina are committed to obtain the mark for a regional wine "Wines of Negotinska Krajina", in line with the growth in demand for high-quality wines with a specific regional identity.

In the promotion of traditional local wines it should be emphasized their long presence in the European and global wine market (wines of Sremski Karlovci were exported even in the 15th century in the Czech Republic and Poland, wines of Negotinska Krajina from 70-years of the 19th century in France, Austria-Hungary, Germany, Russia and other European countries and bermet was present in the U.S. market 150 years ago and in the wine list of the Titanic...) (TOS, 2011).

### Wineries

Wineries are critical points for the competitiveness of wine and profitability of wine tourism. The level of technical equipment and expertise of employees affects the quality of wine. Quality wines and additional cellar door services available to winery visitors, including dedication, courteousness, and skills of winery staff are critical factors for customer satisfaction, which is reflected in cellar door wine purchasing and brand loyalty establishing. The cellar door sale often is the most important distribution canal for small wineries. Visitor satisfaction is also very important for leader wineries as it can greatly affect its market position, including online sales and brand loyalty. Selection of additional cellar door services (traditional food, music, souvenirs and crafts, ethno - exhibitions, visits to vineyards, participation in the grape harvest, education in culture of wine,

organization of visits and meetings for wine professionals, wine festivals, etc.) must be preceded by careful visitor segmentation.

Observed wineries in the Danube basin area, members of the wine routes, are dedicated to producing quality and high-quality wines and wine tourism development. *Bononia Winery* produces about 40,000 l of wine, which keeps in a traditional cellar - lagum near the Danube. In the vicinity of the cellar is a large terrace with views of the river, where tourists taste wines with traditional local food. There are organized grape harvests in the vineyards for tourist groups. *Cellar Radovanovi*, as one of the leaders among domestic wineries, with the young team of professionals and continuous investment in equipment and innovations has reached an annual production of 200,000 bottles of wine and is active in wine tourism too. *Živkovi Winery* opened wine tasting room in Požarevac city, but to meet the tourists the most important is archeological site Viminacium, near the wine farm of Živkovi family in Kli evac. Živkovi Winery has modern capacities for the production of 20,000 l of quality wine. *Matalj winery* has a capacity of 45,000 l per year and offers tourist visit to vineyards and wine cellar with wine tasting and consuming traditional local food.

It is obvious that there is a space for additional services to winery visitors, but it is important to connect these services with other tourist activities in the region in order to obtain complete tourist offer, so called *tourist terroir* of the wine region.

### **Essential destination features and cultural experiences**

**Natural values.** Outstanding natural and landscape values are concentrated in the Danube basin area, particularly in protected areas in the territory of the observed wine regions (NP "Fruška gora", SNR "Koviljsko-petrovaradinski rit") or their hinterland (RAMSAR / IBA "Labudovo okno," NP "erdap," IBA "Mala Vrbica"). Nature tourism, including eco-tourism, and especially recreational activities (educational and scenic walking tours, biking, horseback riding, fishing, etc.), and special interest tourism such as bird watching, etc., can provide additional high-quality tourist experiences.

Due to its geological history, the National Park "Fruška gora" (IPA, IBA, and PBA site), is a complex composition of steppe, forest-steppe and Mediterranean floristic elements, with over 40 plant species in the status of natural rarities, large complexes of lime and mixed forests, hunting and fishing areas, hiking trails and rich ornithofauna. SNR "Koviljsko petrovaradinski rit" is IPA and IBA site - wetlands particularly attractive due to conservation and landscape diversity (islands, backwaters, ponds, and wetlands), marsh plant communities (forests, meadows, swamps, reeds) and ornithofauna. RAMSAR/IBA site "Labudovo

okno" is located between Deliblato sand on the north and Ram settlement on the south, including a small section of the right bank of the Danube between Kostolac and Ram. It is the most important nesting, wintering and migratory station of wading birds in Serbia. NP "erdap" is a region of outstanding geological features (three gorges, two canyons and three valleys) and biodiversity, which are represented in many ancient and endemorelict plant species and communities and heterogeneous fauna (sturgeon species, large carnivores ...). The park is on IPAs and PBAs lists, and on IBAs list, with aquatic habitat "Mala Vrbica".

**Cultural values.** As previously mentioned, due to sharp competition in the global market of international variety wines, it is necessary not only to tie their quality to the region of origin, but also to the long tradition of grape growing and wine production, which in our vineyards is dating back to Roman times and earlier. For this reason, thematic cultural and historical routes, such as "Roman emperors Route" have a prominent role in the promotion of wines and wine regions. According to the Master Plan, the route is positioned as a product of high value touring, which the ancient Roman grounds, combines tangible and intangible cultural heritage, as well as the natural fascination of the Danube, East Serbia and Srem region. It is a path that connects the locations where they were born and / or lived Roman emperors (in the Danube - Sirmium, Singidunum, Viminacium, and Iron Gate part of the Roman Limes) (MERR, 2007). One of them was Marcus Valerius Aurelius Probus (276-282 AD), which was on the southern slopes of Fruška gora mountain, near his home town of Sirmium (Sremska Mitrovica), and in Upper Moesia, on the hill Orašac (Mons Aureus) near Smederevo, planted vines and is considered the founder of viticulture in Serbia (RSPŠV, 1976).

Added to Roman time heritage are the following cultural values as a valuable segment of *tourist terroir*: archaeological sites of the Danubian Neolithic culture (Lepenski Vir and Vin a); fortress on the Danube (Fetislam, Golubac, Ram, Smederevo, Kalemegdan, and Petrovaradin); monasteries of Fruška gora, known, among other things, as a stronghold of viticulture development and production of high quality wines; old city cores and traditional wine cellars (lagumi), in Fruška gora vineyard area (Novi Sad, Sremski Karlovci, Irig) and old wine villages in the Negotinska Krajina (Rajac, Rogljevo, and Smedovac pinnice); traditional cuisine in ethno-ambient of local restaurants and old crafts and handicrafts, as well as local cultural heritage customs and beliefs, especially typical for Negotinska Krajina.

Insufficient and inadequate accommodation facilities, lack of riverbank infrastructure and traffic infrastructure in the inland wine regions, underdeveloped tourist signalization and integrated tourism destination marketing, as well as lack of financial resources, entrepreneurial initiative and qualified human resources are the most common weaknesses in the tourism sector of the study area.

## **Institutional organization and support**

Wineries - leaders are holders of investment in technology and innovation and play a leading role in encouraging the entrepreneurial spirit of other winegrowers and vintners towards the development of wine districts within the wine region. Over 60 wineries are active in the Fruška gora vineyard area, in Negotinska Krajina several dozen, and in Smederevo vineyards more than 10. However, wineries can give the full contribution to the economic development of these areas through their producer associations, i.e. their actions in collaboration with other stakeholders in the local communities and the region as a whole, with institutional and financial support from the state<sup>6</sup> and EU funds.

The result of this organization at the Serbian Danube basin area was a number of local associations of winegrowers and vintners, and regional tourism cluster ISTAR 21. The cluster brings together municipalities on the Danube, as well as entrepreneurs, including producers of local foods, wines and spirits and their associations, tourism agencies and organizations, managers of protected natural area and cultural heritage, ports/marinas, and the spa and recreational centers, event organizers, NGOs dealing with tourism and conservation of nature and all the other entities involved in tourism. Activities take place in the form of strategic partnerships at the municipal level and at the cluster, with the goal of creating an authentic regional tourism product. A number of local stakeholders, as well as the cluster, are members of the Danube Competence Center, established in 2010 as a regional platform for cooperation and marketing in sustainable tourism, and coordination in the Danube Strategy implementation.

For wine tourism in the Danube region it is of particular importance the realization of the project supported by EU DG Enterprise and Industry, through Competitiveness and Innovation Framework Programme of the European Commission (CIP): *Cultural Routes on the Middle and Lower Danube - Roman Emperors Route and Danube Wine Route*. The project started in mid-2012 and will run for 18 months under the leadership of the Danube Competence Center, in cooperation with key public and private tourism institutions and organizations of Croatia, Serbia, Romania and Bulgaria. The main objectives of the project are: introduction of international standards of tourist services/products, improving the quality of cultural heritage presentation, support to local partnerships and small and medium-sized enterprises, strengthening of transnational cooperation and transfer of knowledge and experience (Camernik, 2012).

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<sup>6</sup> A number of measures of investment support to winegrowers and vintners, including wine tourism are envisaged in the National Rural Development Programme (Official Gazette. RS, 15/2011) and operationalized through the government regulations on an annual basis.



## Conclusions

Favorable natural conditions and centuries-old tradition in the production of grapes and quality wine in the Danube basin area in Serbia, as well as a successful transition shift in the vineyard sector towards strengthening family wineries, and their inclusion in Danube wine and cultural routes represent a good strategy to enhance wine tourism and its contribution to territorial development. The perceived financial and infrastructure limitations and weaknesses in human resources must be rapidly overcome with efficient actions of the state and local communities, including EU assistance.

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