Population dynamics of rural settlements and tourism development in the Stara planina mountain area (Serbia)

Abstract: The process of depopulation represents one of the biggest development problems in Serbia, whereby it is particularly present in its peripheral, mountainous and rural areas, characterized by economic underdevelopment. Given the fact that such areas often possess preserved natural assets, development of tourism industry has been recognized by the decision-makers as an instrument for stimulation of their socio-economic and demographic development. The aim of this paper is to consider the potential influence of tourism on improvement of demographic features of rural settlements, as well as to explore the human resources constraints for tourism development in the subject area. The research encompasses the Stara planina area in the south-eastern part of Serbia, representing not only an example of a mountainous area with a particularly large population decline, but also an example of a tourist destination pointed out by the state authorities as a tourism development priority. The largest part of the area has been protected as a nature park with numerous natural tourist attractions, as well as infrastructure for recreational activities. Starting with the 1960s, due to industrialization in urban centres, this area has been affected by mass rural-urban migrations, which caused depopulation, demographic emptying and changes in vital characteristics and population structures of rural settlements, even their spontaneous termination. The research focused on 50 rural settlements in the area, belonging to four municipalities – Zaječar, Knjaževac, Dimitrovgrad and Pirot, whereby 22 of these settlements already possess accommodation facilities which provide services in tourism. Demographic analysis was used to present the population dynamics of each settlement in the period from 2002 to 2011, whereby the population census data were utilized. In addition, as important indicators of the demographic development of settlements, age and economic structures of the population were also considered. In less than a decade, this area lost one third of its population, whereby negative tendencies were observed in the majority of settlements. Elderly households are predominant in the majority of settlements, with average age of residents being 62.8 years, posing an extremely serious constraint for future economic activity. Regarding the economic structure, the dominance of the primary sector was established (64.0% of residents). Joint analysis of the three utilized indicators (total population and its age and economic structure) suggests that several settlements have more favorable demographic features, indicating them as potential local sources of tourism workforce in the future.

Keywords: depopulation, human resources, rural tourism, Stara planina, Serbia

Introduction
Stara planina mountain area is located in the south-eastern part of Serbia, belonging to the powerful system of Balkan Mountains. As a morphological unit it is bounded by the valleys of Beli and Trgovški Timok, and Viročica, and in the east it is bounded by the state border of Serbia and Bulgaria. It spreads across four municipalities – Zaječar, Knjaževac, Pirot and Dimitrovgrad. This part of Serbia has been affected by negative demographic trends since 1960. The industry development in urban municipality centers Zaječar, Knjaževac and Pirot, as well as nearby city of Niš started attracting people from rural countryside looking for jobs. Along with this, urbanization and deagrarization processes were dominant, making the migration process massive. The inhabitants that participated in rural-urban migration were younger, fertile and working populations and decades of emigration led to changes in vital characteristics and population structures and depopulation (Đurković, 2018). Eventually, exhaustion of demographic resources led to marginalization of rural areas and even spontaneous termination of some of the settlements.

Even though the traditional functions have declined or completely disappeared, traces of past activities still remain, both tangible (cultural heritage and landscape) and intangible (history, customs, craftsmanship, traditional agriculture). These remnants may provide basis for both reintroduction of past functions and establishment of new ones. Tourism is considered to have a significant role in the revitalization of underdeveloped rural regions and, therefore, balanced regional development of a country, given the fact that fulfillment of complex tourist needs requires diverse services and products from commercial and non-commercial sectors (Štetić, Pavlović & Stanić, 2012).

Tourism stimulates hospitality and other related economic activities such as agriculture, traditional food industry, craftsmanship and service industries, ultimately leading to an increase of overall production, employment and residents’ income (Selaković, 2014), which further leads to alleviation of poverty and socio-economic inequalities (Maksin, 2012). By providing a wider market for their products and increasing the possibilities for profitable business, it stimulates entrepreneurship in these sectors. For example, through hospitality, diverse agricultural and products of traditional small-scale food industry get incorporated into the tourist offer, particularly distinct local and regional products (Stanković, 2004).

Further, it facilitates reconstruction and modernisation of communal, transport, healthcare, cultural and other forms of infrastructure, thus improving the quality of life of local residents (Todorović & Štetić, 2009). For example, improvement of road infrastructure towards the urban centres alleviates the rural population’s sense of exclusion (Ribar & Videnović, 2002). Additionally, there are numerous non-economic effects of rural tourism, mainly related to the protection of the environment, cultural heritage and traditional ways of life (housing, customs) and economic activities (craftsmanship, extensive agriculture).

Rural areas cover approximately 80% of Serbian territory with 4,542 settlements and 2.9 million inhabitants (Antić et al, 2017). Rural tourism in Serbia, however, does not have a long tradition, since its initial development started in the 1970s in the Zlatibor mountain area in western Serbia (Todorović & Bjeljac, 2007). During the 2000s, rural tourism initiatives started to develop in less traditional tourist regions, Stara planina mountain being one of them. Together with the lack or low quality of general infrastructure and conceptual, organizational and quality issues related to the tourist offer, continuing depopulation of already sparsely populated rural areas, unfavourable age structure and quality of human resources are considered to be among the main constraints for future tourism development in Serbia’s rural regions, (Ćutović, 2004; Todorović & Štetić, 2009; Selaković, 2014).
The aim of this paper is threefold. Firstly, analysis of the tourism industry of the Stara planina mountain area will be conducted, providing information regarding the tourist attraction base, present and possible forms of tourism, as well as existing accommodation facilities. Secondly, demographic analysis of the settlements in the area will be conducted in order to gain knowledge regarding population dynamics and size of settlements, their age and economic structure. These findings will be used to reach conclusions regarding the state of the available human resources in the area. Finally, analyzed settlements will be categorized into groups based on their demographic characteristics, whereby each of the groups will be analyzed in the context of its issues regarding human resources in tourism.

Tourism of the Stara planina mountain area

Stara planina has been protected as a nature park since 1997, while the first activities on its conservation started in 1966. Its abundant tourist attraction base comprises both natural and cultural attractions. Natural ecosystems of the park, particularly those in highly mountainous area, are subjects of minimal anthropogenic influence due to scarce population and economic activity (Spatial Plan, 2008). There are seven strict nature reserves within the nature park, mostly formed to protect rare plant species and forest ecosystems. Parts of the area have also been designated as IPA, IBA and PBA sites. These conditions provide excellent basis for monitored and low-scale ecotourism activities, such as bird watching and hiking. The largest hydrological attraction in the area is the Zavoj lake, providing favorable conditions for water recreation and other activities, while waterfalls, gorges, caves and other geoheritage sites offer significant sightseeing possibilities. Morphometric characteristics of the relief served as basis for plans for extensive development of winter tourism, which will be further discussed.

Cultural attractions comprise mainly sacral objects and traditional architecture. Two monasteries from the 15th and 16th century (Temska and Donja Kamenica) have been protected as cultural values of great importance, whereby several others have some level of protection. There are numerous objects of folk architecture (houses and economic objects such as watermills), creating distinguished and unaltered rural ambients, particularly in the remote villages, where the traditional construction materials still dominate (for example, Dojkinci and Gostuša) (Spatial Plan, 2008).

This area has been included in the priority destinations by the current state tourism development strategy (Strategy, 2015), primarily because of its potential to provide an all-year-round offer, consisting of different forms of sustainable rural tourism, mainly ecotourism, agritourism, cultural and small-scale recreation tourism, as well as winter sport tourism, which represent a possible mass tourism development form. Milijić, Marić & Bakić (2010) point out winter sport tourism as the main form of mountain tourism in the area. However, they recognize the role of other tourism forms necessary to provide optimal utilization of capacities throughout the year.

In the late 2000s, two contradicting development plans were adopted, having different approaches to the goal of formation of ski centres across the mountain. The original spatial plan proposed development of accommodation facilities in the rural settlements surrounding the ski slopes, thus ensuring employment possibilities for the locals, as well as their better connection to the urban centres in the area, via infrastructural development (Perović, 2008).
However, the master plan for tourism development proposed extensive construction of tourist facilities for nearly 23,000 people on the Jabučko ravnište site. While the SP proposed disperse tourism development in 88% of the area with growth in local employment primarily in hospitality and agriculture, the development concept proposed by the MP was based on the highly concentrated development of a tourist resort in only 12% of the nature park (Maksin, 2012). This huge tourist resort was established to be environmentally unsustainable, mostly due to problems related to waste waters and hard waste. Climate change induced problems related to the length of the ski season were also identified. It was also assessed that such concentrated development would isolate the local community from the tourism industry, particularly the groups at risk. Development plans were eventually reduced to 6,000 beds on Jabučko ravnište (Maksin, 2012).

Regarding the current state of the tourism industry in the area, there are approximately 580 beds available in more than 70 registered rural households. It should be noted that intraregional disparities are very high, whereby 75% of beds are registered in the Knjaževac municipality. Total of 46% of all registered beds on the Stara planina mountain are located in the village of Crni Vrh, in whose vicinity the Jabučko ravnište ski trail is located. In addition, there are two hotels and two mountaineer lodges at the site. Stara planina area has one more hotel in the Pirot municipality, as well as two mountaineer lodges in Pirot and Dimitrovgrad municipalities (Dojkinci and Senokos). These hotels and lodges are not owned by the local residents, but still provide valuable workplaces and possibilities for distribution of local products. However, given the discussed benefits of development of sustainable tourism with rural households as the main type of accommodation facilities, small locally owned objects remain the preferred development model.

Maksin (2012) acknowledges the potential of sustainable tourism in diversification of the Serbian rural economy, also stressing that it could facilitate inclusion of the local communities into the tourism sector. According to Perović (2008), self-sustainable existence of local villages may be accomplished through preservation of the natural environment, which would provide opportunities for sustainable agricultural production and tourism. However, since it is still in its early development, present impact of rural tourism and complementary activities on the quality of life of the communities in the Stara planina mountain area is far below its possible contribution (Maksin, 2012). As discussed above, intraregional disparities should also be addressed by future development efforts.

**Human resources constraints**

Baum (2018) stresses the importance of relationships between tourism employment/workforce and wider policy environment, linking them closely to sustainability of communities, migration of working population, job quality, poverty alleviation, local transport and destination development, among others. Ehnert & Harry (2012) recognize the management of problems related to scarce human resources and ageing workforce as one of the key components of sustainable human resources. Presence of these issues in the Stara planina area has been previously mentioned. Discussion regarding the human resources in the area will be carried out based on the following conceptual frame. Destination capacity regarding tourism labour is influenced by ethical, capacity and capability constraints (Baum, 2018). These concepts are operationalized by the following questions: is the industry able to provide “decent work” (quality and sustainable work
places which meet social objectives); are there sufficient employees available and willing to provide services in tourism industry; do the employees have appropriate skills needed for delivery of products and services at a level that would meet the visitors’ expectations. The first question is closely related to the country’s social policy and will not be addressed in this paper. The second considers if the local community is able to provide sufficient workers, or is there a need for migrant workforce (internal or external). This question will be answered in the main part of the study. The third question relates to the skills available through the education and training system. Considerations regarding this question are discussed below.

In addition to the general lack of available human resources in Serbia’s rural tourism, they are also considered to be lacking entrepreneurial qualities, particularly in the sector of entertainment and recreational activities (Štetić, Pavlović & Stanić, 2012). Well educated and trained entrepreneurs and workers contribute with their creativity to the quality of the offer by formation of innovative products and services, which are particularly important in contemporary highly competitive tourism market (Todorović & Štetić, 2009; Mišković & Podavac, 2012). However, human resources in Serbia’s rural tourism are still mostly unfamiliarized with present trends and demands of the modern tourist, which calls for their constant education, particularly regarding the use of information technology for promotion and reservation purposes (Selaković, 2014).

According to Perović (2008), although the locals of Stara planina mostly depend on the agricultural production, they are not aware of the crucial role of pristine natural environment in their economic activity, both current and potential. This issue becomes even more problematic in the context of environmentally responsible agriculture, which is seen as complementary to sustainable tourism. Milijić, Marić & Bakić (2010) stress the need for education of the local community on sustainable development of this protected area, whereby they should be introduced to its ecological, economic and social benefits. More recent research shows that local residents widely recognize the role of tourism in rural development of the area. Maksimović, Urošević & Mihajlović (2015) explored the perception of residents of Knjaževac and Zaječar municipalities regarding the effects of rural tourism development on the Stara planina mountain. The majority of respondents recognized the role of tourism in preservation of the communities’ social and cultural integrity, but the economic and preservation effects were perceived as more important. It was also established that rural tourism development was strongly perceived as a motive for people to stay in the countryside. Petrović, Maksimović & Karabašević (2017) reported that rural tourism was generally perceived as important by the residents of Knjaževac, Zaječar and Pirot municipalities. Expectedly, those employed in the tourism industry perceived its development as more important than those in the local government.

**Methodology**

Demographic analysis was used as main instrument for determining basic demographic features of settlements. The study area covers 4 municipalities, 50 rural settlements (22 with existing tourist facilities) and 5,286 inhabitants. The analyzed data was obtained from the official censuses conducted in 2002 and 2011. This period was chosen based on the fact that initial activities in tourism development in the Stara planina mountain area has begun at the beginning of the 21st century. The analysis included the total number of inhabitants and age and economic structure of the population of each settlement. Results of the
statistical analysis were also presented cartographically. Types of settlements were identified according to their population size, index of change and average age. These types were then analyzed in the context of available human resources for tourism development, whereby several implications of the findings were provided.

**Results and discussion**

Results indicate that the total number of people decreased for 39% (2002 – 8,186; 2011 – 5,826). The noticeable reduction in the number of inhabitants occurred as a result of movement of the natural population component, due to negative values of the birth rates. The specific population dynamics of rural areas can be explained primarily by the border and peripheral position of most rural settlements, as well as by the low degree of economic and overall development in the second half of the 20th century. In times past, these villages were populationally large with agrarian overpopulation, while the arable land was scarce (Sibinović et al, 2017). Due to the lack of resources and the necessary infrastructure, population decided for smaller number of children and emigration.

The index of change shows a tendency of decline in all settlements, except Vlkovija (population increased by 12%). The worst situation is in those settlements (14 of them) where the index of change is lower than 50%, which means that the number of inhabitants was halved in just 9 years, such as Gabrovica, Braćevci, Gornji Krivodol, Papratna, Pokrvenik, Velika Lukanja, Visočka Ržana etc. Reduction smaller than 20% population was registered in Novi Zavoj, Mali Izvor, Vratarnica and Izatovci.

The biggest number of settlements in 2002 were small ones (smaller than 20 and from 20 to 100 inhabitants), which together comprise 54% of settlements with just 12.7% of people. The significant increase of their number in 2011 is noticeable (68% of settlements, 17.8% of population). The number of settlements in groups from 100 to 200, 200 to 500 and more

![Fig. 1. Population size of settlements in the Stara planina area in 2002 and 2011](source: authors based on census data)
than 500 inhabitants was reduced during this period. Together they included 45% of settlements in 2002, and 32% in 2011. In this group, there was a huge decrease of population (33%). The number of largest settlements (from 200 to 500 and more than 500 inhabitants) has been halved. Still they remain the biggest source of population potential. These are settlements Novi Zavoj and Temska (total of 2,092 inhabitants) and Vratarnica, Mali Izvor and Kalna (total 1,116 inhabitants). More favorable living conditions in functionally more important rural settlements and better transport position on the roads Zaječar-Knjaževac-Niš and Knjaževac-Kalna-Pirot contributed to the slower intensity of depopulation. In the once large population settlements, the process of depopulation has already moved far away. Since the 1950s, population of settlements Jalovik Izvor, Ćuštica, Gornja Kamenica, Ošljane, Novo Korito and some others decreased from over 1,000 to less than 200. This is a proof of the intense processes of depopulation in the last 60 years. The age structure is one of the most important indicators of the demographic development of a certain area. Due to the strong spatial rural-urban mobility of the inhabitants, declining fertility rates, there was also a decline in the proportion of young people and an intensive increase in the share of the elderly in the age structure, which led to an intensive process of ageing. The share of young people in 2002 was 10.5%, and in 2011 it decreased to 9.6%. Because of population decline and high mortality rates, the share of elderly actually decreased from 48.1% to 43.6% of the total population. The average age of the population of the Republic of Serbia is 42.2 years, while in this area it is 62.8. The process of demographic ageing is particularly prominent in the settlements far from the municipal centres and in higher rural areas. The settlements located on the main transport roads and near the municipal centers have more favorable age structure. The lowest average age is in Novi Zavoj (43.0), while the only inhabitant in Aldina Reka is actually the oldest one in this area (82.5 years). The change in the number of settlements according to the average age confirms that the population entered the stage of the deepest demographic ageing.

Tab. 1. Types of settlements by available human resources

<table>
<thead>
<tr>
<th>Settlements (%)</th>
<th>Total population (%)</th>
<th>Population size (inhabitants)</th>
<th>Index of change (%)</th>
<th>Average age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 Novi Zavoj, Temska, Mali Izvor, Kalna</td>
<td>12</td>
<td>58.6</td>
<td>&gt;200</td>
<td>70–100</td>
</tr>
<tr>
<td>Selačka, Vratarnica</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2 Balta Berilovac</td>
<td>10</td>
<td>14.4</td>
<td>100–200</td>
<td>60–70</td>
</tr>
<tr>
<td>Gornja Kamenica, Ošljane, Ćuštica, Novo Korito</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 3 Brlog, Dojkinci, Crni Vrh, Donji Krivodol, Gostuša, Inovo, Jalovik Izvor, Janja, Jelovica, Kamenica, Koprivštica, Rsovci, Senokos, Slavinja, Vikovija, Vrtovac</td>
<td>78</td>
<td>27.0</td>
<td>&lt;100</td>
<td>30–60</td>
</tr>
<tr>
<td>Aldina Reka, Aldinac, Baljev Dol, Bela, Bračevci, Dejanovac, Dobri Do, Gabrovnica, Gornji Krivodol, Izatovci, Pakleštica, Papratna, Pokrevenik, Pričevac, Radičevac, Ravno Bučje, Rosomač, Tatarsnica, Topli Do, Velika Lukanja, Visočka Ržana, Zaskovci, Repušnica</td>
<td></td>
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</table>

Modern socio-economic development and restructuring of the active population by sectors is on of the characteristics of the economic development after the 1960s. At the beginning of industrial development, population transferred from the primary to the secondary sector,
and further into tertiary and quartary sector. However, economic development was primarily focused on the urban settlements. The majority of rural population stayed in the agricultural sector. Lack of infrastructure, arable land fragmentation and outdated mechanisation determined the extensive character of the agriculture. Natural conditions oriented its development primarily toward animal husbandry. Regarding the economic structure, the dominance of the primary sector was established (64% of residents), indicating that the agrarian production remained the basic form of economic activity.

The proposed typology is presented in Table 1. Type 1 contains the largest settlements and the majority of population of Stara planina. The slowest trend of population decrease and lowest average age are registered in these settlements, particularly in Novi Zavoj (1,373) and Temska (719). This is the result of the fact that these settlements are located in the vicinity of the municipal centres and main road which connect them. Type 2 has the smallest share in the area’s population and is characterized by a faster depopulation process, due to insufficient size of the fertile contigent. Type 3 contains settlements in the highest zone, closest to the state border and isolated from quality traffic infrastructure and flows. Their position significantly influenced their current demographic picture – highest negative values of index of change, most advanced demographic ageing and smallest population size. The severity of depopulation is best illustrated by the fact that Repušnica, the first abandoned settlement in Serbia, is located in this area. Some of these settlements are in immediate danger of succumbing to the same process, since they were left with only a few inhabitants.

**Conclusion**

Forms of reproductive behaviour and emigration caused unfavourable trends in demographic development of the studied area, which resulted in depopulation and demographic ageing, both posing an extremely serious constraint for future economic activity. Although tourism has been identified as an industry which could ignite the revitalization process of this mountainous rural area, lack of available human resources could significantly impede these development efforts. Given the fact that three demographically distinguished groups of settlements have been identified, different implications for each group regarding the human resources issue will be discussed. Settlements belonging to the Type 1 have the largest demographic potential to supply the future workforce demands of the tourism industry. Almost 60% of inhabitants of Stara planina mountain area live in these settlements, while favourable age structure increases the possibilities of implementation of education and training programmes in tourism. Settlements categorized into Type 2 still have the human resources which could take part in the tourism development. However, local population is not engaged in it, since the level of tourist activity is low. Current age structure indicates that available workforce will continue to decrease, further reducing the chances for tourism development, particularly since they may be considered as less attractive than the Type 3 settlements. Settlements belonging to the Type 3, such as those in the ski centre zone and those surrounding the nature reserves, have the highest level of tourist attractiveness. Also, vast majority of the registered tourist households in the area is located in these settlements. However, due to their advanced depopulation process, lack of the workforce stands out as the most serious issue in future tourism development. While it may be unrealistic for tourism to completely revitalize these settlements, some of them may receive seasonal workforce during the tourism-intensive parts of the year.
References


