

DEVELOPMENT PROBLEMS AND POTENTIALS OF RURAL SETTLEMENTS – CASE STUDY OF RURAL SETTLEMENTS ON THE TERRITORY OF THE CITY MUNICIPALITY PANTELEJ, NIŠ

UDC 711.3(497.11)

Milica Igić¹, Milena Dinić Branković¹, Ljiljana Vasilevska¹,
Jelena Živković²

¹University of Niš, Faculty of Civil Engineering and Architecture, Niš, Serbia

²University of Belgrade, Faculty of Architecture, Serbia

Abstract. *In the Republic of Serbia, rural areas occupy a large part of the territory, where almost 50% of the total population lives. Rural areas play an important role in regional and overall development, they represent areas of great importance for food production and are characterized by landscapes with exceptional natural features. Despite the large number of potentials that characterize these areas, they are devastated, marginalized and backward in economic, social and spatial terms. The paper analyzes rural areas in the territory of the City municipality Pantelej in Niš with the aim of determining their development problems and potentials, which are the basis for defining future programs and projects for the revitalization of these areas. In order to plan comprehensive development for rural areas, it is necessary to determine the key development problems and potentials based on the analysis of all the structures of rural areas so that all their characteristics are considered. The conducted analysis concluded that the analyzed rural areas are currently in poor condition and that revitalization of all their structures is necessary in order to overcome the existing problems, improve the potentials that distinguish them and promote future development.*

Key words: *regional and rural development, revitalization, rural areas, development characteristics*

1. INTRODUCTION

Rural areas have a long history and during their development they went through different development phases. Many researchers explored development of these areas, but there is still no universal definition for them. In accordance with the programs and strategies of the

Received June 13, 2023 / Revised July 10, 2023 / Accepted August 3, 2023

Corresponding author: Milica Igić, Faculty of Civil Engineering and Architecture, University of Niš, Serbia
e-mail: milica.igic@gaf.ni.ac.rs

European Union, according to the OECD definition (Organization for Economic Co-operation and Development [1]), a rural area is defined as an area with a population density of less than 150 inh/km². According to this criterion, about 94% of the territory of Serbia consists of rural areas where approximately 48% of the total population lives, and the average population density is about 47 inh/km² [2]. On the territory of the Republic of Serbia, there are 6,158 settlements - urban and other, of which 72% are located within rural areas.

At the global level, rural areas occupy a significant area, however, the characteristics of all structures of rural areas are not the same in the case of developed and underdeveloped countries. In developed countries, urban-rural disparities are not much pronounced - the difference between these areas is reflected in lower population density, more intensive use of land for agricultural purposes and a characteristic rural landscape in rural areas. In the case of underdeveloped and less developed countries, there is a clearly expressed difference between urban and rural areas, where rural areas are recognized as areas with extremely low population density, an economy primarily oriented towards agricultural production, reduced quality of life and living standards, poor access to public services and underdeveloped or completely absent communal infrastructure [3,4]. In accordance with current trends in European countries, as the biggest problems facing rural areas are recognized depopulation and low population density [5], underdeveloped connections with urban areas [6], economic underdevelopment with GDP lower than average [7] and lower quality of life than in urban areas [8].

This paper explores the current state of rural areas on the territory of the City municipality Pantelej in Niš, with the aim to determine the key development problems and potentials that are precondition for planning the future development of these areas. Rural areas occupy a significant area on the territory of the City of Niš and play an important role in the overall development of the city. These settlements, that are not even located at a great distance from the urban territory, are characterized by a low population density, a devastated economy, an underdeveloped network of basic communal infrastructure, and the quality of life is not at a satisfactory level. The network of settlements, as well as their interconnections, are not developed, and the settlements are irregularly distributed on the territory of the city [9,10].

The starting point of this research is that for the effective revitalization of rural areas, it is necessary to perceive and take into account all the characteristics of rural areas at the local level. In order to plan the revitalization and development of rural areas, it is necessary to conduct a comprehensive analysis of the current state of all structures in rural areas and clearly determine the key development problems that should be overcome and the potentials that should be further developed. In this way, the context is defined, which is an important basis for planning further development. Based on that, the goal of this study is to systematize the occurrence and causes that generate the decline of the economy, depopulation and reduction of the quality of life in settlements in the rural area on the example of one of the municipalities on the territory of the City of Niš. Also, the goal is to determine the criteria for evaluating the current situation, and based on the conducted comprehensive analysis, to determine the key development problems and potentials for the further development of rural areas.

2. METHODOLOGY

The methodological framework in this paper is based on the analysis and description of the current state of rural areas and the determination of key problems and potential for

development based on the results obtained. In the first part the paper explores current definitions and classifications of rural areas in order to define the theoretical framework for the analysis and establishes criteria for evaluating the current situation. After that, the paper analyzes the current state of each structure of rural areas in order to determine their specific characteristics. Based on the findings, the paper determines key development problems and potentials and discusses the future actions regarding the rural development.

Rural areas within the territory of the City of Niš were chosen because this is the third largest city in the country, and it is the seat of the most underdeveloped and mostly rural region in the country – Region of the Southern and Eastern Serbia. Within the city territory there are five municipalities with total 69 settlements and for further analysis rural areas in the City municipality Pantelej were selected. This City municipality has a very dynamic terrain, on its territory there are mountainous, hilly and lowland settlements that mostly emerged spontaneously, it is characterized by rich natural landscape and settlements within it have very long history that affected their structure. Because of all that, these rural areas are selected as good examples for research and analysis.

3. DEFINITION AND CLASSIFICATION OF RURAL

Definitions of rural areas and their connections to urban ones have been investigated by many researchers, and over the years different concepts have been used. In the XIX century, the concept of urban-rural dichotomy was used, where these two terms were considered as two bipolar types of settlements - modern and traditional [11]. Due to the strict division, this concept was replaced in the 1930s by a concept that defined a set of 9 criteria for determining urban and rural areas [12]. Since this concept of defining urban and rural is characterized as descriptive, in the middle of the last century it was replaced by the urban-rural continuum model, according to which there are no clear boundaries between urban and rural, and these two areas are overlapping [13]. In the 70s of the last century, these concepts were replaced by the concept of separatism – “urban planning and rural separatism”, where there is a complete separation of the urban from the rural (fig 1).

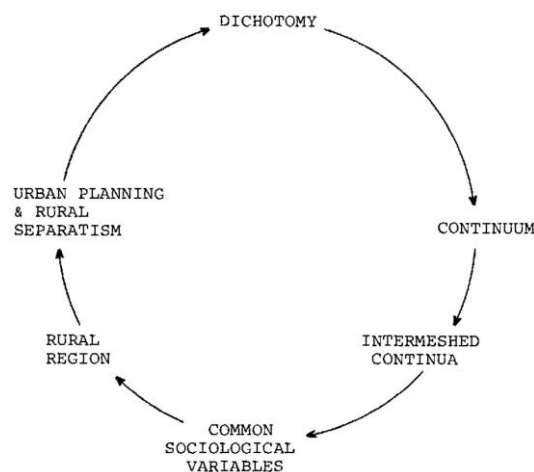


Fig. 1 Model of rural-urban relationship according to Cloke & Park (Source: Cloke P. Park

For the "determination" of rural, the most widely accepted concepts are according to Cloke [14], who defines three concepts of rurality: (a) the functional concept, which is based on identifying the functional components of rural areas; (b) a political-economic concept based on the impact of political-economic processes on the rural structure and (c) a social component based on the specific sociological characteristics of rural areas and their specific relationship with nature. As for the classification of rural areas, the most widely used is the classification according to the OECD. In order to adapt the classification of rural areas to the situation on the site, in 2005 and 2011, the OECD defined additional classifications to demarcate urban from rural areas. First, the existence of a city with a larger number of inhabitants within the area is introduced as a criterion, and since some settlements gravitate towards it, their status changes [15].

Although there is no unique definition of rural, for the statistical monitoring of rural areas according to Vasilevska [16], two types of definitions can be recognized: (a) first type - the categorization of rural areas and settlements is within the administrative area (most often municipalities) and the basic criterion is population density; (b) in the case of the second type, an urban area is defined as an area under the influence of an urban settlement, and a rural area is defined as an area outside this area. Rural can also be defined as anything that is not urban (negative definition of rural). According to Kojić [17], rural settlements are settlements where the main economic activity of the majority of the population is agricultural production, they are characterized by a low population density of 1-40 inh/ha and very weak or completely absent communal equipment. Rural areas can also be defined as natural landscapes that, under the influence of anthropogenic factors, are divided into smaller units that have characteristic landscape patterns, a specific way of using land and a unique cultural identity [18]. Statistical definitions of rural and urban settlements are mainly related to population censuses. The definition of a settlement according to the Bureau of Statistics from 1952 is that a settlement is a special anthropogeographic territorial unit with a special name, regardless of the number of houses and that the settlement is characterized by: population, territory, number of houses and name [19]. In Serbia today, the classification into urban and other - automatically rural settlements is used, and this division was established for the purposes of the census in 1981 [20]. This classification does not give a real „picture” and is not in accordance with the situation on the site because there are big differences between other settlements in the demographic, spatial and economic sense [21], so the stand point of some researchers is that it is necessary to introduce a trichotomous division of settlements and define a third - transitional type settlements [22].

Rural areas have been discussed within many planning and strategic documents in which various classifications of rural areas have been established. During this research, the adoption of the Draft version of Spatial Plan of the Republic of Serbia from 2021-2035 is in the process. Within this document [2], six different types - regions of rural areas are recognized on the territory of the Republic of Serbia. The territory of the Nišava District is predominantly marked as “an area of rural distortions”, except for the urban territory of the City of Niš. The rural territory of this region is characterized by demographic emptying, heterogeneous territory and uneven characteristics of peripheral and areas around urban centers. Within the Strategy of Agriculture and Rural Development of the Republic of Serbia for the period 2014-2024. [23], there was no new classification, and official statistical classification of urban and other settlements is used.

There are a large number of classifications of rural settlements depending on their genesis, functions, geographical location, population density etc [9]. Most of the rural

settlements emerged spontaneously and their territory spread toward urban areas. In Table 1, main classification according to genesis, number of inhabitants, altitude at which settlements are located and conditions for agriculture production are presented. Based on the last criterion, some of the settlements on the territory of the City municipality Pantelej are classified as settlements with difficult working conditions for agriculture production.

Table 1 Classifications of rural settlements according different criteria
(Source: Authors according: [17,20,24,25])

Criterion	Classification
▪ by genesis	<ul style="list-style-type: none"> ▪ planned settlements ▪ unplanned settlements – spontaneously emerged
▪ by number of inhabitants	<ul style="list-style-type: none"> ▪ small villages 0-500 inh. dwarf villages 0-100 inh small villages 100-500 inh ▪ medium villages 500-2000 inh medium small villages 500-1000 inh. medium-large villages 1000-2000 inh. ▪ larger villages 2000-3000 inh. ▪ large villages >3000 inh.
▪ by altitude	<ul style="list-style-type: none"> ▪ lowland settlements at 0-200 m altitude ▪ hilly settlements 200 - 500 m altitude ▪ mountainous settlements > 600 m altitude
▪ by conditions for agriculture production	<ul style="list-style-type: none"> ▪ area with favorable conditions for agriculture production < 500m altitude ▪ area with difficult conditions for agriculture production ≥ 500m altitude

4. RURAL AREAS IN THE CITY MUNICIPALITY PANTELEJ

The City municipality Pantelej is one of the five city municipalities on the territory of the city of Niš, it occupies an area of 141.01 km² and within which are 13 settlements determined as “other” (table 2). The City municipality was created in 2004 by dividing the administrative territory of the City of Niš into 5 city municipalities. Rural territory occupies a large part of the City municipality - about 96% of the total territory and the average population density is about 130 inh/km². According to census data, in the last 11 years, the number of inhabitants in other settlements has decreased by about 1,000 inhabitants, or close to 5%, while the number of inhabitants in the urban territory has increased by about 5%.

Table 2 Main statistical and spatial data for the City municipality Pantelej
(Source: Authors according: Census data [26,27], Geosrbija)

City Municipality	Surface km ² /geosrbija/	Urban territory surface km ² /geosrbija/	Rural territory surface km ² /geosrbija/	Inhabitants /Census 2011/		Inhabitants /Census 2022/	
				urban	other	urban	other
Pantelej	141,01	5,41	135,60	34.724	18.762	36.354	17.765

Rural settlements on the territory of the City municipality Pantelej were selected for the research because it is a city municipality whose territory has a very dynamic terrain

and all three types of settlements are present - lowland, hilly and mountainous. Also, the settlements on the territory of this City municipality are characterized by rich biodiversity and architectural fund, cultural and historical heritage and their economy is oriented towards agricultural production. Functional connections between settlements are not sufficiently developed spatially, there is no hierarchically differentiated polycentric system of settlements. Therefore, it was concluded that these settlements represent a representative pattern and are an adequate example for research and determination of key development problems and potentials. In the following chapters, an analysis of the current state of each of the structures of these rural areas will be presented. For the purposes of the research, the structure of rural areas was observed throughout the following segments: socio-demographic, economic, spatial-functional and environmental structure in order to comprehensively analyze the current situation and perceive all the specificities of these areas.

4.1. Socio-demographic structure

In the City municipality Pantelej, there are 13 settlements categorized as other, which are irregularly distributed on its territory. The settlements have a long history, which is indicated by the rich cultural and historical heritage on their territory. As for the number of inhabitants, based on data from the census for the period 1948-2022 [26,27], there was a pronounced decline in the number of inhabitants and the villages of Vrelo, Pasjača and Cerje have less than 150 inhabitants. A slight increase in the number of inhabitants is noticeable in the villages of Kamenica and Donja Vrežina. In recent years, the village of Donja Vrežina has acquired the features of a suburban settlement, because the territory of the village merged with the city territory due to the expansion of the city territory. In the case of the village of Kamenica, the central - old part of the village records a decrease in the number of inhabitants, while the village expands in the weekend zone of Vinik towards the city. This zone is located on the edge of the cadastral municipality, separated from the old core of the village by a zone of agricultural land. This zone borders the urban territory and in recent years, due to its position and the characteristics of the terrain, it has begun to be intensively built and inhabited. Population trends according to data from different censuses is shown on the Figure 2.

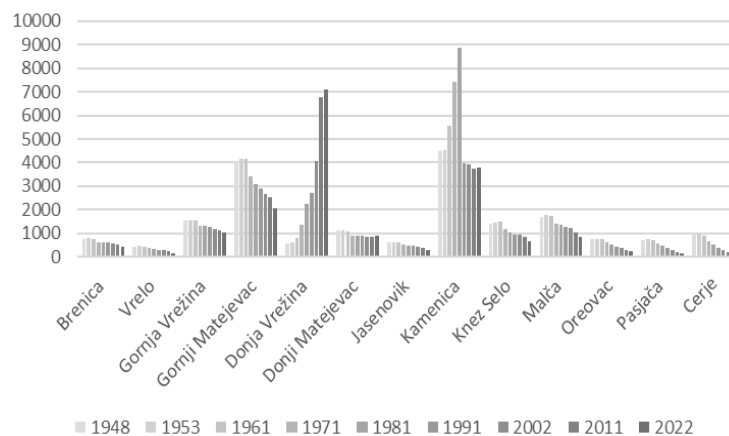


Fig. 2 Population trends in the period 1948-2022 (Source: Census data [26,27])

On the territory of this City municipality, the majority of the settlements are categorized as small and medium-sized villages, with the exception of the larger village of Gornji Matejevac, and large villages Kamenica and Donja Vrežina. There are no dwarf villages on the territory of this City municipality according to the data from the last census. Due to the decrease in the number of inhabitants in the villages of Cerje, Pasjača and Vrelo it is assumed that in the next census they will be categorized as small-dwarf villages. Table 3 shows the main demographic characteristics of these settlements according to data from 2022 Census results.

Table 3 Main demographic characteristics of rural areas in City municipality Pantelejš (Source: Authors according: Census data [27], Geosrbija)

Settlement	Inhabitants /census 2022/	Settlement type	Area /km ² /	Population density st/km ²	Population younger than 15 /%/	Population older than 65 /%/
Brenica	428	Small	8.16	52	12.1	24.3
Vrelo	169	Small	3.94	43	2.3	36.7
Gornja Vrežina	1019	Medium large	6.57	155	12.3	23.5
Gornji Matejevac	2041	Larger	18.36	111	13.9	26.5
Donja Vrežina	7085	Large	4.02	1762	15.1	19.5
Donji Matejevac	875	Medium small	9.86	89	11.4	33.5
Jasenovik	305	Small	7.51	41	10.2	30.8
Kamenica	3773	Large	19.44	194	14.7	19.8
Knez Selo	680	Medium small	10.43	65	10.4	34.7
Malča	853	Medium small	14.52	59	10.4	31.3
Oreovac	259	Small	8.77	30	13.1	31.7
Pasjača	128	Small	4.82	27	1.6	46.1
Cerje	150	Small	19.2	8	4.7	36.7

As far as the population density is concerned, only Kamenica, Donja and Gornja Vrežina have a population density higher than 150 inh/km², which is a consequence of the relatively small area of these settlements and the fact that the territory of the settlement Donja Vrežina merged with the city territory. The settlement of Cerje has the lowest population density, where the population density is 8 inh/km², and in total 150 inhabitants live on the territory of the settlement, which is the village with the smallest number of inhabitants after the village of Pasjača. It is also the settlement whose cadastral municipality has the largest area and entire territory is located at an altitude above 500m.

Based on the analysis of census data from 2022, it can be seen that the age structure is not favorable. In all settlements, the share of the population over 65 is higher than the share of the population under 15. This is most pronounced in the villages of Vrelo, Pasjača and Cerje, while the difference is smaller in settlements Gornja and Donja Vrežina, Gornji Matejevac and Kamenica. The average age of the female population is higher than of the male population, except in the case of the villages of Malča and Brenica, where the average age of the male population is slightly higher. In the gender structure, there is not a big difference between the number of male and female population. In the villages Gornji Matejevac, Donja Vrežina, Kamenica, Malča and Knez Selo, the female population has a slightly higher share in total population number, while in other villages the situation is reversed. Based on that, it can be concluded that there are no significant disparities on the share of male and female population.

4.2. Economic structure

The economy in these settlements is devastated and is mainly oriented towards agricultural production. Tradition in agriculture in these settlements has a long history, but in recent years it has been oriented towards production for own needs. The Kamenica - Matejevac - Malča area was a well-known wine growing region in the 80s and 90s of the last century. In Donji Matejevac and in Malča there are wine cellars that were Production Industrial Combines, and from which the local communities had huge incomes. Due to the appearance of many grape diseases, the plantations were destroyed, the cellars were abandoned and some of them privatized in the period after 2000. In Malča, production has continued in the native cellar and there are wine tours organized. In that period there were numerous agriculture cooperatives, which stopped functioning after 2000, leaving many buildings empty and with unsolved ownership. After this, the first agricultural social cooperative was founded in Kamenica by the Association for Local Development of Kamenica, which was formed in 2008 with the aim of activating and developing the area of Southeastern Serbia. Abandoned structures of former cooperatives are neglected, except the culture center - cooperative center in the village of Donji Matejevac which was reconstructed few years ago as a part of a project financed by the city. The purpose of this project was to create a multifunctional agro-resource center for farmers from the territory of the City of Niš. In other villages these cultural centers are abandoned and some are still with unresolved ownership and some were privatized.

The agricultural production is mainly for own needs and the land is divided to plots with very small area which is why the agriculture production is not competitive. In the territory of the City municipality Pantelej, about 64% of agricultural households also have livestock. In the territory of each of the settlements, except in the case of the village of Donja Vrežina, more than 50% of agricultural households also have livestock. Poultry, goats and pigs are mostly raised. The number of farms where cattle and sheep are raised is also significant. Table 4 shows data related to agricultural households as well as the structure of available agricultural land in the rural territory of City municipality Pantelej.

Table 4 Main data regarding agriculture households and their structure
(Source: Authors according: Census data [28])

Settlement	Number of Agricultural Household /AH/	Number of AH with livestock	Available land within AH /ha/	Structure of available land within AH / % /			
				in use	not used	forests	other
Brenica	119	99	268	63	13	21	3
Vrelo	67	56	132.9	67	19	13	2
Gornja Vrežina	164	124	360	77	15	5	4
Gornji Matejevac	305	166	557.9	68	23	6	4
Donja Vrežina	33	13	83.2	76	17	3	4
Donji Matejevac	121	62	220.2	74	9	13	3
Jasenovik	110	76	258.3	65	20	14	1
Kamenica	188	112	358.8	64	14	20	3
Knez Selo	132	95	286.3	61	26	9	4
Malča	172	128	493.6	62	14	20	4
Oreovac	61	52	178.3	76	12	10	2
Pasjača	68	60	180.9	70	16	12	3
Cerje	86	56	384.7	42	14	42	1

Only in the territory of the villages of Gornji Matejevac and Knez Selo, about 1/4 of the available agricultural land is not used. Except in the village of Cerje, the surface of available land of agricultural households that is used is more than 50% of the total surface of available land. The largest area under forests is located in the cadastral municipality of the village of Cerje and amounts to over 40% of the usable area. Table 5 shows data related to the structure of available agriculture land that is in use.

Table 5 Structure of available agriculture land that is in use
(Source: Authors according to Census data [28])

Settlement	Available land in use within AH /ha	Structure of available land in use within AH /%/			
		Infield	Arable land and gardens	Permanent plantings	Meadows and pastures
Brenica	268.0	0	73	13	13
Vrelo	132.9	3	58	21	18
Gornja Vrežina	360.0	0	72	23	4
Gornji Matejevac	557.9	1	44	53	2
Donja Vrežina	83.2	0	65	22	12
Donji Matejevac	220.2	1	44	54	2
Jasenovik	258.3	2	56	21	21
Kamenica	358.8	2	65	30	4
Knez Selo	286.3	0	62	30	8
Malča	493.6	1	67	26	6
Oreovac	178.3	0	75	11	14
Pasjača	180.9	0	67	20	13
Cerje	384.7	1	62	7	30

Regarding the structure of the used land, the smallest surface is occupied by the area of the infield. Except in the villages of Donji and Gornji Matejevac, in all other villages more than 50% of the land is classified as arable land and gardens. Except in the villages of Brenica, Cerje and Oreovac, in other villages the area under permanent planting is between 20-30% of the total area of used agriculture land, and in the villages of Donji and Gornji Matejevac this area occupies about 50% of the used land. In the territory of the villages of Cerje and Jasenovik, meadows and pastures make more than 30% of the available agriculture land surface. Few years ago, in village Donji Matejevac large production of mushrooms was started and several residents were employed in this production. In the course of 2020, through the association of the locals and with the help of funds from the City municipality's fund, several hectares of strawberry plantations were planted in the village of Donji Matejevac. There is an active association in the village, the Association of Water Users and Agricultural Producers "Donji Matejevac", with the involvement of which the project of water supply and the introduction of lighting in one part of the agricultural land in the village was implemented.

In 2009, the Association for the Protection, Education and Study of Animals "Zoo Planet" was founded in village Kamenica, the first of its kind in the territory of the city. In settlements that are close to the highway exit or along the regional road to eastern Serbia, the formation of a "service zone" - a zone of warehouses, as well as small, medium and micro enterprises for the processing and production of non-agricultural products can be recognized. Various warehouses and small production facilities were opened in the villages of Malča and Donji Matejevac, which created new jobs, where priority is given to the residents of the villages where they open production.

4.3. Spatial and functional structure

Settlements on the territory of the City municipality Pantelej are mostly compact type, whose territory was created spontaneously - unplanned, following the configuration of the terrain. The rural territory of this City municipality is hilly-mountainous, and the altitude ranges from 214 m in the settlement of Donja Vrežina, which is located next to the urban territory and the bank of the river Nišava, to 847 m in the settlement of Knez Selo, which is located on the slopes of the Svrljiške mountains. On the territory of this City municipality, at altitude of 837 m, there is the top of Mount Kalafat. Due to its long history, the irregularities in the plan of the built up area of these settlements mainly go back to the period of the rule of the Ottoman Empire. The village of Gornji Matejevac is identified as the center of the settlement community, to which the villages of Kamenica, Knez Selo and Donji Matejevac gravitate [29]. Kamenica represents a secondary center - a settlement with limited functions of centrality, to which Brenica and Cerje gravitate. These two settlements are connected to Kamenica because of the eight-grade main school, and because of the infirmary. The villages of Oreovac, Pasjača, Vrelo and Jasenovik gravitate towards the village of Malča, which we can be also recognized as a secondary center, while Gornja Vrežina gravitates towards Donja Vrežina and the Municipality center. In the village of Gornji Matejevac, a kindergarten was built in 2011, and children from Gornji and Donji Matejevac, as well as from Knez Selo, are enrolled in this kindergarten. In the same village, in 2021, the counter of the Communal company "Objedinjena naplata" was opened so that the residents of the surrounding villages could pay bills for communal services. In the village Knez Selo, there is a building of the former Special Hospital for Lung diseases, which was moved to the city few years ago. Table 6 shows main functional characteristics of rural settlements in the City municipality Pantelej.

Table 6 Main functional characteristics of the settlements (Source: Authors, [29])

Settlement	Functional type	School	Primary healthcare	Local Administrative office
Brenica	Primary village	4 grades	/	/
Vrelo	Primary village	4 grades	/	/
Gornja Vrežina	Primary village	8 grades	Infirmary	+
Gornji Matejevac	Center of settlement communities	8 grades	Infirmary	+
Donja Vrežina	Primary village	4 grades	Infirmary	+
Donji Matejevac	Primary village	4 grades	/	+
Jasenovik	Primary village	4 grades	/	-
Kamenica	Settlement with limited centrality functions	8 grades	Infirmary	+
Knez Selo	Primary village	4 grades	/	+
Malča	Settlement with limited centrality functions	8 grades	Infirmary	+
Oreovac	Primary village	4 grades	/	+
Pasjača	Primary village	4 grades	Infirmary	-
Cerje	Primary village	4 grades	/	-

Figure 3 shows the spatial distribution of rural settlements on the territory of City municipality Pantelej, their hierarchy and mutual connections.

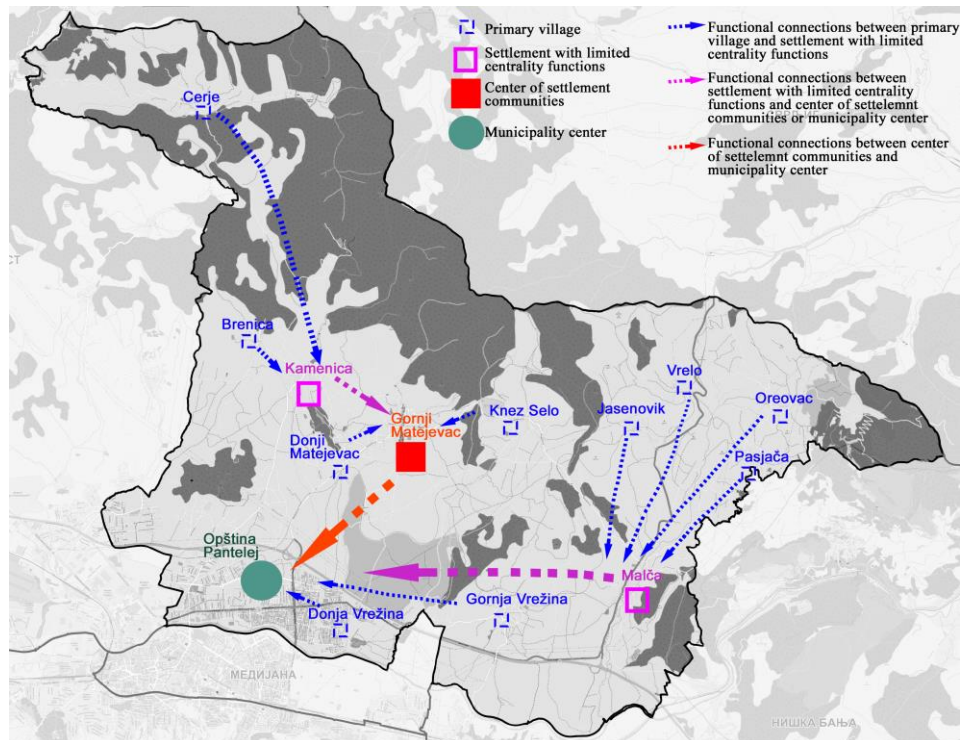


Fig. 3 Spatial distribution of rural settlements on the territory of City municipality Pantelej, their hierarchy and mutual connections. (Source: Authors)

At the moment, only for two settlements – Cerje and Jasenovik there are Detailed regulation plans adopted but not implemented. There is a decision for the development of the plans for the Cerjanska Cave, monument Čegar and Second - home areas¹ around Kamenica, but these plans are still not finished. There are public transportation lines to most settlements that drive several times a day, except in the case of the settlements of Cerje, Oreovac, Vrelo and Pasjača, which are mostly cut off in winter because the roads are impassable. Except for the villages of Donji Matejevac and Donja Vrežina, the other villages have their own water supply systems, which, like in the territories of other municipalities, is a big disadvantage, so the inhabitants are often without water. Sewerage reached the village of Knez Selo (but only in one part of the village), but the surrounding villages - Kamenica, Brenica and Cerje - still do not have sewage system.

These settlements have a very long history, as evidenced by numerous monuments and sites. In the village of Kamenica, there are remains of the Roman waterworks that supplied water to the summer residence from the "Srećkovo Vrelo". During the time of the Ottomans, this village was the center of the Čegar battle, as evidenced by the monument that still exists today. In Gornji Matejevac there is a Latin Church from the 11th century that was preserved

¹ Second-home areas are referred to low housing density areas with houses that are mainly used for leisure purposes and for tourism activities. These residences are owned and used by people whose place of residence is somewhere else [31,32].

even during the period of Ottoman rule. Next to it there are the monasteries of St. John and St. George, which are several centuries old. In the village of Gornji Matejevac, a project funded by IPA cross-border cooperation with Bulgaria, was implemented and the road to the St. John monastery was reconstructed. The oriental influence is clearly recognizable in the architecture of some villages - the houses were built facing the courtyard, and there are high gates facing the street, which completely block the view of the courtyards. The streets are very narrow and winding, there are a lot of dead ends, and every village has its mahallas or small ones that have remained from that period.

4.4. Environmental structure

Territory of the cadastral municipality of villages of Gornja and Donja Vrežina are located along the banks of the Nišava River, so their agricultural land is threatened by floods. There are also four smaller rivers - Brenička, Kamenička, Matejevačka and Malčanska rivers, which rise in the territory of the villages of the same name, as well as Kneselski, Crveni and Brenički streams, which flow towards rivers on this territory. The beds of these rivers are not trained, and according to the data from the Operational Plan for flood defense in the territory of the City of Niš for the year 2021, the agricultural land through which they flow is threatened by the occurrence of floods [30].

In the course of the last 10 years, the communal company has included these rural settlements in the waste disposal program, with the aim of reducing the creation of illegal landfills. Unfortunately, despite this system of organized waste disposal, illegal landfills are very common, especially in the area where there is agricultural land and along streams. These landfills represent a great threat for emerging the floods since these rivers and streams are threatened by the occurrence of floods. There is a plan for the construction of the first solar power plant on the territory of the City of Niš in the village Vrelo, because it has been estimated that there is significant solar potential.

In addition to the cultural heritage, there are also significant areas of natural resources in this region. The villages Vrelo, Oreovac, Pasjača, Knez Selo and Cerje have the potential for the development of recreational tourism because they are located on hilly terrain and have the rich forest land. In Knez Selo, there are sites from different time periods that have not been sufficiently explored, and near the village there is a former military shooting range which is mainly used by the locals or is used for rally races. Above the village of Kamenica there is Kamenički Vis, also a large recreational area for which there is an initiative to turn it into a winter center, and on which there is one of the Niš metrological stations. In the village of Cerje, there is the Cerjanska cave, which was opened for visitors only a few years ago through organized tours. There is a shooting range in the village of Malča, a polygon that is the only one of its kind on the territory of the City. Despite numerous potentials, the villages do not have developed tourism, agriculture is still the main, and in some villages the only economic activity.

5. KEY DEVELOPMENT PROBLEMS AND POTENTIALS

Based on the conducted comprehensive analysis, below is presented a systematized overview of key development problems and potentials of rural areas on the territory of City municipality Pantelej.

Socio-demographic structure

According to the data of the 2022 census, a decrease in the number of inhabitants is evident in almost all settlements. By comparison with data from the census of previous years, it was observed that the trend of decreasing population number has been going on for several decades. That is why demographic emptying of these settlements is recognized as one of the key problems. There are a large number of causes of depopulation, primarily migration to urban areas due to poor quality of life, lack of jobs and inaccessibility to all public services. By analyzing the age structure, it can be concluded that it is not favorable, which is a big threat for the future development of these settlements and which contributes to the depopulation process. Also, the unfavorable age structure affects the activity of the local community, and the rural population is recognized as one of the main resources of rural settlements. Due to their current state, rural areas are often marginalized and are synonymous with something backward - underdeveloped, and opposite of current and modern.

On the other hand, rural areas are recognized as places convenient for a healthy life due to the unpolluted environment and rural way of life. This is especially pronounced in the period after the COVID pandemic. As the economy in rural settlements is primarily oriented towards the agricultural production, the participation of the older population can be seen as an advantage due to their traditional way of life and traditional way of land cultivation.

Economic structure

Based on the analysis, it was concluded that the main activity in these settlements is agricultural production and, to a smaller extent, animal husbandry [livestock keeping]. The agricultural land is very fragmented, which in many ways influences the competitiveness on the market. A big problem is also the "retail" production for one's own needs of a large number of different cultures. There is no clear division into zones for growing different crops, but planting is done in an uncontrolled manner, so some crops have a negative effect on others. "Usual" crops are grown without the introduction of new sorts. Due to the unfavorable age structure, weak economic situation and insufficient qualifications of the people involved in agriculture, the land is cultivated in the traditional way in most cases. Crop protection is at very low level because there is no education of farmers about the appropriate means of protection and disease prevention of crops. Mechanization is mostly outdated, modern agro-technological measures are not applied in the cultivation process. Due to the increasingly pronounced impact of climate change, yields are decreasing because there are no adaptation measures for their negative impacts. There is no network of infrastructure supporting agricultural production, and no agricultural pharmacy or veterinary station in analyzed settlements, and the vet comes by invitation only.

There are no pronounced vertical zones, which favorably affects the agriculture production. The soil is fertile and the moderate climate without significant oscillations favors the cultivation of a large number of crops. The current problem with small plots could be solved with land readjustment which is also regulated by the law. There is a developed processing of agricultural products within farms for own needs, which is not yet registered due to complex administration. The existence of water courses in the zone of agricultural land represents the potential for irrigation. Fertile and mostly unpolluted soil and a favorable climate represent the potential for the diversification of agricultural production and the cultivation of some new and "current" sorts. There are a large number

of calls through IPARD and national funds, which can be a potential for getting the funds for the renewal of mechanization and the modernization of agricultural production. Few villages already had an experience with implementing these projects. Some of the many buildings can be adapted for the needs of the supporting infrastructure (purchase stations, cold stores, logistics centers), as was the idea for the cultural center in Donji Matejevac. The analyzed settlements have a large number of potentials for the development of some other activities and diversification of the rural economy - primarily tourism [33]. On the territory of the analyzed settlements, there is a potential for the development of various types of tourism, which, in addition to economic improvement, can also contribute to a better functional connection of the settlements on the territory of this and the settlements on the territory of adjacent municipalities.

Spatial and functional structure

Analyzed settlements are not spatially and functionally adequately connected, there is no developed and hierarchically structured network of settlements, which is a big problem and threat for further development. In the analyzed settlements, unplanned construction is pronounced, and the reason for this, in addition to insufficient control by the competent institutions, is the late adoption of planning documents. Currently only general regulation plans are adopted, the implementation of which is not at an enviable level. Public transportation connections in some settlements are very weak, which makes the daily life of the residents difficult. The unsatisfactory level of access to public services is also one of the significant development problems. Illegal and unplanned construction directly disrupts the rural environment and threatens traditional architecture. On the one hand, unused buildings due to unresolved legal-property relations stand in settlements and mostly in central positions, and on the other hand, the settlement is expanding uncontrollably at the expense of arable and natural areas. Buildings dating from an earlier period are not adequately protected and there are no defined measures for their restoration. The condition of the physical structure in rural settlements is not at a satisfactory level, which is partly the cause of migration.

Favorable terrain configuration does not represent an obstacle for the expansion of the settlement and the planning of a large number of activities. There is a developed network of educational institutions, which is important for the younger population not to have to travel. There are already infirmaries in some villages, which represents the potential for organizing mobile services in villages that do not have primary health care. Proximity to urban territory makes great possibility for improvement of urban-rural connections. These settlements are characterized by a rich architectural fund that can be re-used. Many structures are made of natural and local materials, which is very suitable for housing, and with a little adaptation they can be used again. The rural environment represents a great potential for further development and protection of these settlements because it represents a unique entity that can contribute to the development of tourism and the increase in the number of inhabitants.

Environmental structure

Environmental structure has an important role in the overall state of rural areas and it directly affects the quality of life. Within analyzed rural areas, there is a problem primarily in inadequate land management and in the use of land – mainly agricultural and forest. As a result of illegal construction, the surrounding land is devastated without any

plan, which leads to a reduction in the area of natural landscapes. Forest land, which is largely represented in some of the settlements, is used uncontrollably and illegal logging is a frequent occurrence. Also, there is no adequate management of water resources, which are significantly endangered due to climate change. These rural areas face the global challenge of climate change and its negative consequences. Floods, droughts, extreme weather conditions are only the consequences and there is no permanent plan for adapting to them. As a result of their action, in addition to the environmental structure, the physical structure and economy of rural settlements are also threatened because they represent a direct threat to agriculture, but also the health and life of people as well as the quality of life. Inadequate waste management has a negative impact on the environment, and illegal landfills on the territory of settlements and along waterways is one of a major problem in these settlements.

Environmental structure is characterized by an unpolluted environment, and because of that rural areas are synonymous for a healthy lifestyle, unlike in urban areas. Large natural areas are characterized by rich biodiversity, diverse flora and fauna and significant areas of forest land on the territory of these settlements. Rivers and streams form a branched and rich hydrographic network, which is a significant potential for irrigation of agricultural land. Undisturbed ecosystems represent the comparative advantage of these areas. The natural resources and entities that exist represent the potential for the development of tourism and thus the diversification of the rural economy. The moderate climate and favorable configuration of the terrain are a potential for diversification of traditional agricultural production and livestock keeping.

6. CONCLUSION

Rural areas occupy a significant territory and their development has an important role in the overall development. Their condition in the Republic of Serbia is not at an enviable level, they are devastated and their development has stagnated in recent years. For their future development, it is necessary to perceive all their characteristics and plan further development based on the specifics of each area - on a smaller scope and not on larger territorial units where the structure of these areas is heterogeneous. Rural population, tradition in food production (agriculture), intact landscape and natural resources and diverse and large construction fund represent their comparative advantage. In order to ensure their future development, it is necessary to take a comprehensive look at their existing condition and, based on that, plan the revitalization process of these areas. A precondition for successful further development is the revitalization of the existing state.

By analyzing each of the structures, the key development problems and potentials were determined. Problems from one structure have an impact on the problems and potentials of other structures, and their „cause-and-effect“ relationships must be carefully considered so as not to jeopardize future development. The demographic structure affects the economic one because it is not possible to plan the development of the economy if the trend of depopulation continues. On the other hand, the economic structure has a negative effect on the demography, because the devastated economy is the trigger for the process of demographic emptying. The rural population has an impact on the physical and environmental structure because its actions influence the built space and the natural environment. The poor condition of the physical structure and lack of communal facilities have a negative impact on the quality of life and affect the depopulation process. Underdeveloped infrastructure has a negative impact on the

environment and economic development, because it is not possible to diversify the economy if there is no basic communal infrastructure. All structures are exposed to the negative impacts of climate change, a global phenomenon, and currently there are no plans for adaptation and mitigation in rural areas.

Even in the case of potentials, the mutual connections and influences between different structures are expressed, so it is necessary to take that into account in future plans. The inactivity of the rural community, the lack of interest of the local self-government represents a threat to the further development of some of the potentials. The analysis found that it is possible to improve and diversify agricultural production and thereby increase competitiveness on the market and crops yields. Also, it is possible to diversify the economy not only through the development of tourism, but also the further development of tertiary and quaternary activities that already exist or are in the beginning in the analyzed rural settlements.

Based on the conducted analysis, it can be concluded that although there is a large number of problems that these areas face, they are characterized by a great number of potentials that can be further developed. All of the above indicates that these findings are in line with the current trends and researches of rural areas in the countries of Europe [34], especially Scandinavian countries [35,36]. Rural areas are facing similar problems, even if their context is different. Also, the results of the research are in accordance with the Draft Spatial Plan, which analyzes problems and potentials, but at the level of the entire country and recognized regional units. Results of this research indicate the importance of the context analysis for further development and revitalization of rural areas.

Taking into account the complexity of the revitalization process of rural areas and its importance for overall rural development, it can be concluded that the conducted research represents the basis for further research in this context. By analyzing the current state of rural areas on the territory of the City Municipality of Pantelej, the characteristics of their structures - socio-demographic, economic, spatial and functional and environmental - were systematized, which can be used as a basis for defining future program and project models for revitalization and development of these areas. By systematizing the observed potentials of rural areas in the territory of this City Municipality, it was concluded that they should be used as comparative advantages of these areas when planning programs for revitalization and their overall development. It was determined that the potentials should be further developed, because they are recognized as one of the planning tools for the effective revitalization of rural areas. This research represents the context analysis of these areas, which is the first step in planning the development of these areas.

Overall, it can be concluded that developed rural areas represent an important element in regional and overall development. Their further development is possible through the activation of all their comparative advantages - primarily the rural population. By improving urban-rural connections, it is possible to reduce the urban-rural disparity and improve their mutual functional connections. This research established a context that is the basis for planning further development, and the point of view of this research is that this development should be planned at the local level with activating local resources.

Acknowledgement. *The paper is a part of the research done within the project 'The construction of student dormitories in Serbia at the beginning of the 21st century' (MPNTR - 36037), financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.*

REFERENCES

1. Organization for Economic Co-Operation and Development (1994) *Tourism Strategies and Rural Development*, OCDE/ GD (94)49, Paris: Organization for Economic Co Operation and Development
2. Nacr Prostornog plana Republike Srbije za period 2021-2035. godine, available on web address: <https://www.mgsi.gov.rs/cir/dokumenti/javni-uvvid-u-nacr-prostornogplana-republike-srbije-od-2021-do-2035-godine-i-izveshtaj-o>
3. T. Gutu Sakketa, "Urbanisation and Rural Development in Developing Countries: A Review of Pathways and Impacts", Discussion Paper, Deutsches Institut für Entwicklungspolitik in Bonn, 2022
4. D. Tošković, "Urban and Rural Environment and Urbanization Developing Countries", Institut za arhitekturu i urbanizam Srbije, 2016
5. DEMIFER (2010) *Demographic and Migratory Flows affecting European Regions and Cities: Final Report*, available at web address: https://www.espon.eu/sites/default/files/attachments/Final_report_DEMIFER_incl_ISBN_Feb_2011.pdf
6. L. Dijkstra, H. Poelman, "Remote Rural Regions, How Proximity to a City Influences the Performance of Rural Regions", *Regional Focus No1*, DG Regio, European Commission, 2008
7. P. Leuba: "A Better Future for Europe's Rural Areas", Congress of Local and Regional Authorities of the Council of Europe, Recommendation 406 (2017), available at web address: <https://rm.coe.int/a-better-future-for-europe-s-rural-areas-governancecommittee-rapporte/168074b728>
8. R. Brauer, M. Dymitrow: "Quality of Life in Rural Areas: A Topic for the Rural Development Policy?", *Bulletin of Geography. Socio-economic Series*, 2014, No. 25, pp. 25–54
9. M. Igić, P. Mitković, M. Dinić-Branković, J. Đekić, M. Mitković, "Spatial and Functional Structure of Rural Settlements in Municipalities of Niš", *Facta Universitatis Series: Architecture and Civil Engineering Vol. 15, No 1, Special Issue*, 2017, pp. 85-101, DOI: 10.2298/FUACE161214006I
10. P. Mitković, Lj. Vasilevska, I. Bogdanović, M. Dinić, "Functional and Size Typology of the Village Settlements in the City of Niš territory", *Facta Universitatis, Series: Architecture and Civil Engineering Vol. 2, No 4, 2002*, pp. 231 – 24
11. A. Lukić, "O teorijskim pristupima ruralnom prostoru", *Hrvatski geografski glasnik 72/2*, pp. 49 – 75, 2010
12. P. Sorokin, C. Zimmerman, "Principles of Rural-Urban Sociology", Henry Holt and Company New York, pp.13-58, 1929
13. R. E. Pahl, "The Rural-Urban Continuum1", *Sociologia Ruralis*, 6(3), pp. 299–329, 1966
14. P. Cloke, "Conceptualizing Rurality", in P. Cloke, T. Marsden and P. Mooney (eds) *Handbook of Rural Studies* (London: Sage), 18–28, 2006
15. M. Fadić, J.E. Garcilazo, A. Moreno Monroy, P. Veneri, "Classifying Small (TL3) Regions Based on Metropolitan Population, Low Density and Remoteness", *OECD Regional Development Working Papers 2019/06*, OECD Publishing, 2019
16. Lj. Vasilevska, "Ruralni razvoj u regionalnim okvirima", *Zadužbina Andrejević Beograd*, 2006
17. B. Kojić, "Seoska arhitektura i rurizam, teorija i elementi, drugo izdanje", *Građevinska knjiga Beograd*, pp. 132-244, 1973
18. J. Živković, M. Bulatović, "Predeo i održivi prostorni razvoj Srbije", poglavlje u *Kreativne strategije za održivi razvoj gradova u Srbiji*, Arhitektonski fakultet Univerziteta u Beogradu, str.123-157, 2010
19. M. Ban, "Naselja u Jugoslaviji i njihov razvoj u periodu 1948–1961", *Institut društvenih nauka, Centar za demografska istraživanja Beograd*, 1970
20. M. Mitrović, "Sela u Srbiji, promena strukture i problemi održivog razvoja", *Republički zavod za statistiku Beograd*, 2015
21. M. Dinić, P. Mitković, J. Đurić, "Planski tretman naselja na području GUP-a u Srbiji sa osvrtom na GUP Niša", *Zbornik radova sa Međunarodnog naučno-stručnog skupa 8. Letnja škola urbanizma Novi aktuelni zakoni o uređenju prostora i njihovo sprovođenje / Prioritetni investicioni objekti*, str. 215-223, *Udruženje urbanista Srbije, Tara*, 30. Maj – 01. Jun 2013, ISBN 978-86-84275-29-7
22. M. Pantić, "SILC i tipologija naselja: statistička analiza opravdanosti trihotomne podele naselja", *Tim za socijalno uključivanje i smanjenje siromaštva Vlada Republike Srbije i Program Ujedinjenih nacija za razvoj*, Beograd, 2016
23. *Strategija poljoprivrede i ruralnog razvoja Republike Srbije za period 2014 - 2024. godine*, Službeni glasnik Republike Srbije, broj 85/14, 2014
24. Đ. Simonović, "Urbanizacija sela, Uređenje seoskih teritorija i naselja", prvo izdanje, *Građevinska knjiga Beograd*, str. 81-134, 1980
25. *Pravilnik o određivanju područja sa otežanim uslovima rada u poljoprivredi*, Službeni glasnik Republike Srbije, broj 102/18, 2018

26. Republički zavod za statistiku, "Popis stanovništva, domaćinstava i stanova 2011.; Stanovništvo: Uporedni pregled broja stanovnika 1948., 1953., 1961., 1971., 1981., 1991., 2002. i 2011.", knjiga br. 20, Republički zavod za statistiku Beograd, 2012
27. Republički zavod za statistiku, "Popis stanovništva, domaćinstava i stanova 2022. Godine, Starost i pol, podaci po naseljima", knjiga br. 2, Republički zavod za statistiku Beograd, 2023
28. Republički zavod za statistiku, "Popis poljoprivrede 2012., Poljoprivreda u Republici Srbiji", Republički zavod za statistiku Beograd, 2013
29. "Prostorni plan administrativnog područja Grada Niša", 2011, Službeni list grada Niša, br. 45/2011
30. M. Dinić Branković, M. Igić, P. Mitković, J. Đekić, I. Bogdanović Protić, "Exploring the Potentials of Small Urban Streams in Creating Blue-Green Infrastructure in the City of Niš, Serbia", Proceedings of the International conference on Contemporary Theory and Practice in Construction XIV STEPGRAD, pp. 159-174, University of Banja Luka - Faculty of Architecture, Civil Engineering and Geodesy, Banja Luka, 11-12. June 2020
31. P. A. Clark, "The Changing Role of Second Home Ownership: The Case of Whistler Resort, British Columbia". Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Arts in the Department of Geography, Simon Fraser University, 1992
32. B. Ericsson, H. Øian, S. K. Selvaag, M. Lerfald, M. A. Breiby, "Planning of Second-Home Tourism and Sustainability in Various Locations: Same but Different?", Norsk Geografisk Tidsskrift - Norwegian Journal of Geography, 76:4, 209-227, 2022, DOI: 10.1080/00291951.2022.2092904
33. M. Igić, M. Mitković, P. Mitković, M. Dinić-Branković, J. Đekić, I. Bogdanović Protić, M. Ljubenić, "Rural Tourism Development as a Catalyst of Urban-Rural Synergy in the Region of Southern and Eastern Serbia", Chapter 9 in „Handbook of Research on Urban-Rural Synergy Development Through Housing, Landscape, and Tourism“, Editors: Aleksandra Krstić-Furundžić and Aleksandra Đukić, pp. 172-192, IGI Global, Hershey, 2019, ISBN13: 9781522599340, DOI: 10.4018/978-1-5225-9932-6
34. C. Bengs, K. Schmidt-Thomé: "Urban-Rural Relations in Europe, ESPON 1.1.2 Final Report", Centre for Urban and Regional Studies Helsinki University of Technology, 2005, available at web address: <https://www.espon.eu/programme/projects/espon-2006/thematicprojects/urban-rural-relations-europe>
35. Nordregio: "State of the Nordic Region 2020", eds. Grunfelder J., Norlén G., Randall L., Sánchez Gassen N., Copenhagen: Nordic Council of Ministers, 2020
36. J. Neubauer: "ESPON for Nordic Regions: Breaking Down Selected Results from the ESPON Programme for the Use in a Nordic Regional Context", Nordregio Working Paper 2007:4, Stockholm: Nordregio

KLJUČNI RAZVOJNI PROBLEMI I POTENCIJALI RURALNIH NASELJA, PRIMER RURALNIH NASELJA NA TERITORIJI GRADSKE OPŠTINE PANTELEJ, NIŠ

U Republici Srbiji ruralna područja zauzimaju veliki deo teritorije na kojoj živi skoro 50% ukupnog stanovništva. Ruralna područja imaju značajnu ulogu u regionalnom i ukupnom razvoju, predstavljaju područja od velikog značaja za proizvodnju hrane i odlikuju ih predeli sa izuzetnim prirodnim karakteristikama. I pored velikog broja potencijala koji karakterišu ova područja, ona su devastirana, marginalizovana i zaostala u ekonomskom, socijalnom i prostornom smislu. U radu se analiziraju ruralna područja na teritoriji Gradske opštine Pantelej u Nišu sa ciljem utvrđivanja njihovih razvojnih problema i potencijala, koji su osnova za definisanje budućih programa i projekata revitalizacije ovih područja. Da bi se planirao sveobuhvatan razvoj ruralnih područja, neophodno je utvrditi ključne razvojne probleme i potencijale na osnovu analize svih struktura ruralnih područja kako bi se sagledale sve njihove karakteristike. Sprovedenom analizom utvrđeno je da su analizirana ruralna područja trenutno u lošem stanju i da je neophodna revitalizacija svih njihovih struktura kako bi se prevazišli postojeći problemi, unapredili potencijali koji ih karakterišu i pospešio budući razvoj.

Ključne reči: regionalni i ruralni razvoj, revitalizacija, ruralna područja, razvojne karakteristike