SUSTAINABLE RURAL DEVELOPMENT IN SERBIA: TOWARDS A QUANTITATIVE TYPOLOGY OF RURAL AREAS

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Abstract: This article examines the effectiveness of quantitative approach in establishing the typology of rural areas in Serbia. For this purpose, from the spectrum of multivariate statistical methods available, we employed the principal component analysis to highlight multidimensional nature of heterogeneity of the vast rural space in Serbia. The effort to encompass multidimensionality of rurality is made by engaging numerous demographic, economic, agricultural, and infrastructure indicators in the analysis. The results of this research indicate regions with different developing trajectories: Southwest Serbia with predominant demographic dimension; Northern part of Serbia with stressed agricultural orientation and potential; dispersed economically propulsive regions mainly located in the areas adjacent to major transport infrastructure; and regions with overrepresented urban structures where sprawl of urban influence is obvious in most rural municipalities near larger cities. The resulting principal components could be the starting point in defining appropriate planning strategies and developing directions based on the analyzed rural particularities.

Key words: Rurality, heterogeneity, rural areas, typology, Serbia

1. INTRODUCTION

The issue of the rural areas has an important place in scientific research, especially in the modern period, when, as one of the vital issues, requires development of a geospatial complex beyond the boundaries of the urban areas. This is primarily a consequence of the growing interest of the modern society for rural sustainability, especially in the underdeveloped, peripheral and devastated rural areas, which greatly burden the overall development at the national and global levels. For this reason, an integrated and sustainable rural development has been imposed as a matter of priority in terms of globalization at the beginning of the 21st century (Cifirić, 2003; Woods, 2005; McDonagh, 2012).

The crises of different early development concepts brought into the focus, although in its rudimentary shape, the idea of sustainability. The concept of sustainability derives from the view that human beings are 'using up' or consuming the environment at a rate which will soon result in a seriously depleted level of environmental resources (Murdoch, 1993). Sustainable development was first publicized in the World Conservation Strategy in 1981. It was subsequently adopted in the Brundtland Report (1987). However, the present notion of sustainability was developed in the following decades, based on European and world institutional reports and conferences. According to these documents, sustainable development refers to the multifaceted qualitative development, comprising social, economical and cultural development adjusted to conditions, constrains and capacity of the environment, without reducing development possibilities for subsequent generations (Vujošević, 2013).

Widely accepted as a new development concept, sustainable development found its application in the rural areas. Sustainable rural development is broadly defined as a development oriented policy concept of permanent mitigation of poverty and insufficient development of the rural areas, as well as a concept designed to develop rural areas through activation of self-reliance and careful allocation of state resources, and enforcement of economic growth (Dams, 1985; Ellis & Biggs, 2001). This approach focuses on diversification of economic (emphasizing local synergies between

different sectors) and social (access to education, health and social services) activities in rural areas, particularly in the underdeveloped ones (Murdoch, 1993; Ashley, 2002; Woods, 2011). In all interpretations of rural sustainability, the strongest methodological and conceptual 'tension' exists between economically and ecologically perceived sustainability. The core of the problem is in finding balance or trade-off between environmentally acceptable economic development, socially fair development and spatially and regionally balanced development.

New generation of European and regional documents on sustainable development is relevant for Serbian circumstances. For Serbia, the biggest potential of these documents particularly lays in their relation to the sustainable rural development. However, Serbian problems and development priorities do not match with the European ones, since Serbia is an underdeveloped country, peripheral to the main European integration flows, mainly as the consequence of civil wars and international isolation in the 1990s, and of slow pace in establishing efficient institutions later on. In comparison to most European states, it is not appropriate for Serbia to apply EU documents and strategies directly, in their unmodified forms.

Majority of Serbian documents only distantly consider the notion of rural sustainable development. An additional problem is that the concept of sustainable development in Serbia is not endogenous, but imported. Simple replication of foreign experiences does not guarantee success. Serbia needs a new generation of documents on sustainable rural development, containing general principles and criteria that are fully applicable and operational, and strongly related to the main development issues and priorities of Serbia.

Official strategic and spatial planning documents treat rural areas in Serbia as unified, without considering their heterogeneity. Without taking into account the diversity of the rural areas in demographic, economic and environment perspective, it is almost impossible to face a lot of development problems. This is the key reason why development strategies until now generally had negative consequences in the underdeveloped rural areas. It was only in the beginning of 2009 that the Serbian government adopted the very first Plan of Strategy of Rural Development.

The basis for appropriate evaluation in rural planning policies requires objective spatial zoning and indexing of territory. This article aims to contribute to the establishment of such a foundation through suggested rural typology of Serbia.

Development of an adequate typology of the rural areas should be a starting point for deep research of the rural areas in order to take appropriate measures for their sustainable development.

This paper highlights the opportunities of the quantitative approach in establishing typology of Serbian rural areas. To achieve this, we have implemented the principal components analysis, based on various demographic, economic, agricultural and infrastructural indicators. Multivariate quantitative approach had already been successfully applied in several studies on EU rural (and urban) areas (for example, see: Bengs & Schmidt-Thomé, 2006; Ballas et al., 2003).

2. RURAL AREAS IN SERBIA: DEFINITION AND MAIN CHARACTERISTICS

2.1. Historical background

Serbia has a long history of human occupation with settlements history that goes back to the Middle Ages. The oldest preserved rural settlements date from the late 12th and early 13th century. It is estimated that there were 5 040 rural settlements in the Middle Ages in Serbia (including Kosovo and Metohija). During the period of the Turkish rule, from the 15th to the 18th century, the Turkish censuses recorded 6 080 settlements. The increase in the number of villages is a consequence of the Turkish administration, which recorded each separated group of houses as a village (Simonović & Ribar, 1993).

From 1815 to 1918, the territory of Serbia was being developed in the framework of three political-geographical units that shaped the main characteristics of rural settlements (Radovanović, 1985): 1) The settlements of Vojvodina were being developed within the Austro-Hungarian Empire and gradually transformed into planned settlements; 2) The settlements of liberated (central) Serbia experienced significant changes, obtaining mixture of Oriental, Middle-European, and traditional Balkan attributes; 3) The settlements of Kosovo and Metohija and parts of Sandžak remained a part of the Turkish Empire, preserving the basic characteristics from the previous historical periods.

Today, there are still considerable differences between Vojvodina and the central part of Serbia. Vojvodina is characterized by the relatively balanced network of rural settlements as a result of inherited planning matrix from the second half of the 18th century. The central part of Serbia expresses highly differentiated rural space. There are large rural centers, located on the development axes of

Serbia (such as Corridor X), and scarcely populated and underdeveloped villages in the mountainous, peripheral and border areas. Results of the 2011 census show that there are 4 528 rural settlements in Serbia (without Kosovo and Metohija), with a population of 2 914 990 inhabitants.

2.2. Defining rural areas in Serbia

According to different theoretical-methodological approaches in defining the rural areas of Serbia, the term 'rural' is open to a variety of interpretations and there is a diversity of criteria for defining the rural areas in Serbia. In general, there are two main groups of definitions of a rural area – the official one (administrative and statistical) and the scientific one (Macura, 1954; Ćirić, 1979; Cvijić, 1991; Stamenković, 2004).

In the census of 1961, the settlements in Serbia (and Yugoslavia) were classified as urban, rural and mixed (meaning transitional form, from rural to urban). Since the census of 1981, the settlements have been classified as urban and 'others' using the official administrative criteria. This means that the settlements have been defined as urban according to the decision of the local authorities (the relevant legal act). The settlements not declared as urban have been considered as rural (labeled as 'others'). Despite new attempts in solving this impreciseness, this issue has been left open, leaving settlements` classification inappropriate for the scientists and professionals. Methodologically, this is a complex issue and a problem, because any research focused on the rural areas is at great risk of data misinterpretation. Therefore, the problem of defining the rural area for the purposes of scientific research still exists as one of the main methodological issues.

In order to overcome the above mentioned methodological limitations and comparability of the results of the rural areas in Serbia with other countries, the OECD criterion for defining the rural areas has increasingly been used. It is based on the population density as the criterion for defining the rural and urban areas. At the level of local administrative units (LAU 2), the municipalities that have a population density lower than 150 inhabitants/km^2 are considered rural (OECD, 1994).
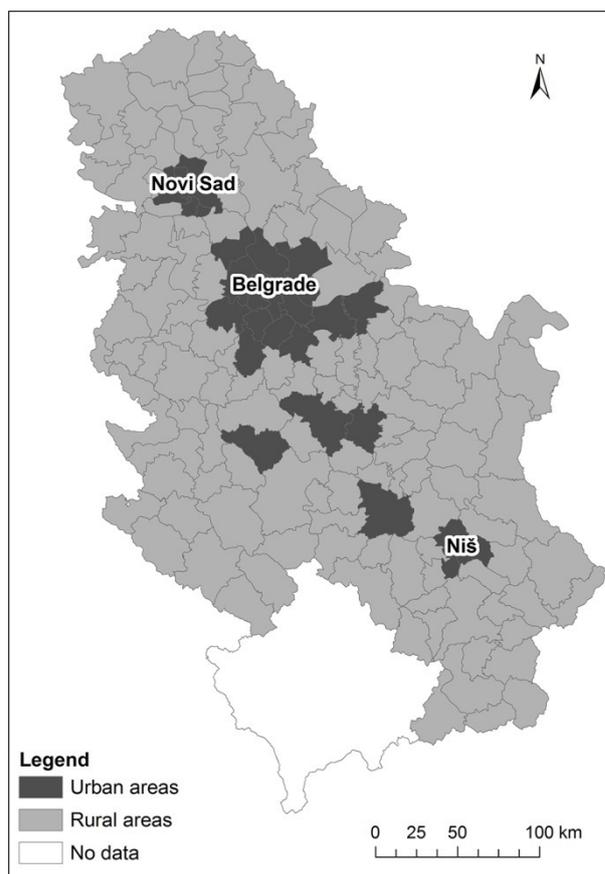

Figure 1. Research area – urban and rural areas in Serbia, according to the OECD criterion, in 2011

Table 1. Urban and rural areas in Serbia using two criteria – Serbian administrative and OECD

Classification	2002				2011			
	Settlements	%	Population	%	Settlements	%	Population	%
Administrative criterion								
Rural Area	4 529	96.2	3 279 522	43.7	4 528	96.2	2 914 990	40.6
Urban Area	177	3.8	4 218 479	56.3	181	3.8	4 271 872	59.4
OECD criterion								
Rural Area	3 904	83.0	4 161 660	55.5	4 132	87.7	3 137 432	43.7
Urban Area	802	17.0	3 336 341	44.5	577	12.3	4 049 430	56.3

For the purposes of this research, we have also used the OECD criterion. The positive side of this approach is the possibility to compare the data on the rural areas in Serbia with other countries. The key flaw related to the application of OECD criterion in Serbia is reflected in the delimiting value of the population density (150 inhabitants/km^2), with the respect to the fact that in 2011 the average population density in Serbia was only 81 inhabitants/km^2, almost twice lower than the applied threshold of the OECD definition. Because of the mentioned differences, the OECD criterion overlaps the administrative one in 85% of settlements and 70% of population, in the case of Serbian territory.

However, according to both criteria, the most important thing to note is that the rural areas are spread over three quarters of the Serbian territory (Fig. 1) with around 90% of settlements and almost half of the total population (Table 1).

2.3. Main characteristics of Serbian rural space

Until the mid-20th century, rural areas had a population of more than three-quarters of the total population of Serbia, which mainly based its existence on agriculture. Subsequent processes of industrialization and urbanization, as well as deagrarization and deruralization, have resulted in marginalization, devaluation and devastation of the rural areas (Derić & Perišić, 1995; Mitrović, 1997).

Focusing on socioeconomic development on urban-based industrialization reinforced the emigration of the rural population. Rural depopulation became one of the largest structural development problems of the Serbian society in general (Radovanović, 1999). Rural areas of Serbia experienced the characteristics of rural exodus during the 1960s, starting from the eastern and southeastern parts towards the other parts of the country (Todorović, 2007). Long-lasting institutional marginalization of villages culminated in the period 1971-1981, when 1.4 million people left the agricultural production (Todorović & Drobnjaković, 2010). In recent time, depopulation is still mostly pronounced in eastern and southeastern Serbia, which lost 11% of its population from 2002 to 2011 (Spasovski & Šantić, 2012).

According to the 2011 census data, 95% of the rural settlements in Serbia have less than 2 000 inhabitants. Additionally, in the period 1961-2011, the number of settlements with less than 500 inhabitants doubled, making two-thirds of the total number of settlements. Finally, one fourth of the settlements in Serbia had less than 100 inhabitants in

2011. Since 203 settlements have less than 20 inhabitants and the medium age of population is over 50 years, it is assumed that numerous villages will disappear soon from the map of the country. According to the last census, 11 villages were already without inhabitants, and our field work showed that there were 20 abandoned villages in 2014.

Negative demographic processes are followed by striking economic decline in rural areas (decrease of the GDP, lack of investment, high unemployment rate etc.). Rural economy is highly dependent on primary sector – mainly traditional, mono-functional agriculture. Approximately 45% of the rural labor force works in agriculture, which ranks Serbia among the most agrarian European countries. The share of agriculture of the rural areas in the GDP is about 30%, which is significantly more than in other transitional countries. Dependence on traditional agriculture increased poverty to more than 60% of the rural population (Bogdanov, 2007). The unemployment rate in the rural areas is high (21%), which is particularly pronounced among the young population (National Program of Rural Development of Serbia 2011). The limiting factor of rural economic development is represented by the unfavorable educational structure of rural labor force (28% with no formal education, 27% primary education and 36% secondary education).

3. METHODOLOGY

Methodologies for defining the rural areas typology may be broadly divided into aggregative and disaggregative approaches (Ballas et al., 2003). In this paper, we will keep on the aggregative approach that is commonly based on results of multivariate analysis. In the past decades there has been an increasing number of multivariate statistical analyses in rural contexts (Cloke, 1977; Kostrowicki, 1989; Errington, 1990; Blunden et al., 1998; Harrington & O`Donoghue, 1998; Petterson, 2001; Ballas et al., 2003). Furthermore, based on multivariate analyses, typologies of Serbia (Bogdanov et al., 2008), Croatia (Lukić, 2012) and Bosnia and Herzegovina (Meredith, 2007) have been recently done.

The main advantage of using quantitative (multivariate in this case) analysis in typology studies is the comparability of results. Significant heterogeneity of rural areas strengthens the importance of the typology as an important instrument and prerequisite in research and planning development of rural areas (Ballas et al., 2003). Previous typology studies of rural areas indicated the importance of understanding the processes that influenced their contemporary socioeconomic, functional and

morphological structure. Suggested typologies have to take into account the regional and local similarities and differences in order to respond to the set objectives of the research (Blunden et al., 1998).

The three phases of the methodology that were used in order to define the major rural complex attributes indicating relatively homogeneous zones are shown in figure 2.

The first step of the methodology was the identification of rural areas in Serbia based on the OECD criterion. Rural areas cover approximately 80% of Serbian territory, with 131 municipalities, 4 132 settlements (87.7% of Serbian settlements), and 3 137 432 inhabitants (43.7% of the total population in Serbia).

The second step refers to the selection of relevant variables. Variables that principal components analysis required were derived from the results of Serbian census in 2011 (Statistical Office of the Republic of Serbia, 2011). We started with more than 40 variables, but at the end we included 16 of them. This is initially caused by a number of crucial data gaps (incomplete census data for agriculture, missing data for some municipalities, boycott of the census in three municipalities in the south etc.). In addition, some variables were excluded from the analysis after careful examination of correlation coefficients between variables and of variable definitions. This was necessary in order to avoid giving disproportionate weight to certain type of data, as well as to remove variables of little relevance to the study. The selected variables can be classified into four types:

- demographic (population density, average household size, share of youth in the total population, share of old people in the total population, share of non-migrant population and natural increase rate),

- economic (share of employees, share of employees in primary sector, share of employees in secondary sector, share of unskilled population and municipality share in Serbian investments),

- infrastructural (road network density, share of arterial roads and number of telephones per inhabitant),

- agricultural (share of agricultural land and municipality share in Serbian crop production).

The third step is directly related to the application of the principal components analysis. This method is used to summarize in a few dimensions (or components) many facets of the rural areas in Serbia. In general, it allows us to aggregate a range of variables into small number of complex components that capture, as much as possible, the bulk of information contained in the original dataset of the research area (Kiurski et al., 2013).

We determined the cutoff point for the number of components that are going to be retained after surveying the scree plot for natural breaks in the distribution of eigenvalues. This was balanced with aspiration to find a convenient number of components that, at the same time, explain a respectable percent of the total variance.

Additionally, Varimax rotation was applied to improve the interpretability of the component loadings while ensuring that the components are statistically independent from each other.
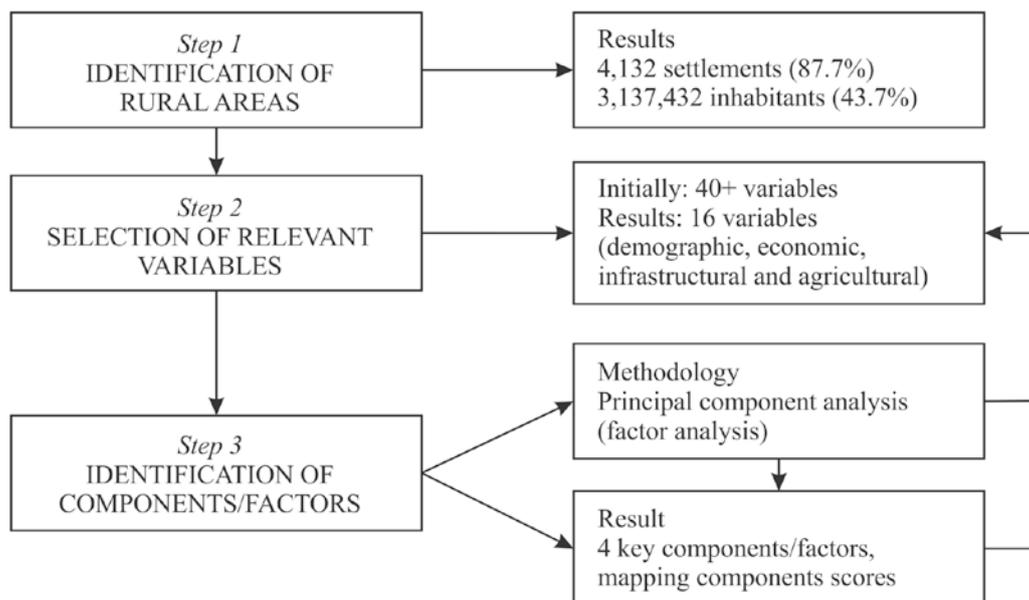

Figure 2. Methodology of research

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The final results are obtained with a critical eigenvalue of 1.0, for which four components are extracted (the fourth component has an eigenvalue of 1.22). The percent of the total variance explained by all four principal components is 65.3%.

Interpretation of the derived components is one of the most challenging phases of the principal components analysis. It is common to assign a name to each component in accordance to the set of original variables that shows high factor loads. The names of the selected components should reflect the specificity of a particular rural area. According to this, we named four key components as follows: Demographic Potential, Agricultural Potential, Economic Potential, and Urban Influence.

4. RESULTS AND DISCUSSION

Heterogeneity of the rural areas in Serbia, with different problems of different intensity, highlights the importance of applying the typological method as an important instrument in the research of the rural areas. At the same time, recognizing the diversification of the rural area is also the starting point in order to perform its proper typology and adopt strategies that really correspond to spatial potentials and limitations. In developing a typology of rural areas in Serbia, one should strive to select the variables that will objectively and comprehensively indicate the main structure, function and processes that influence the diversification of rural areas (Martinović, 2014).

Using the principal components analysis in geographical research of rural areas is extremely convenient. The application of this method is relevant not only as a data reduction method through the definition of complex components (Table 2), but also because it allows the researcher to calculate the component scores for each spatial unit (in this research, rural municipality). The municipality will have a high component score for a given factor if there are high values for the variables that explain this component. In the cartographic presentation, the categorization of the component score values is done by the use of standard deviation.

The largest share of variance (22.203%) is explained by using the first component. According to positive and negative correlations we named this component *Demographic Potential* (Fig. 3). Demographic indicators show the high degree of load in this factor. This component has a very high positive correlation with the share of youth in the total population and with a natural increase. It also has a high positive correlation with the average size of the households and population density.

Consequently, a very high negative correlation is manifested with the share of population older than 60 years old. The highest values of the component are in the municipalities of southwest Serbia with predominantly Muslim population and also in the municipalities in the gravitational areas of the largest and most developed cities in Serbia (Belgrade, Novi Sad, Niš and Kragujevac). The lowest values of this component are in the eastern and southeastern parts of Serbia, known as highly depopulated rural areas.

Table 2. Component loads (result of principal component analysis, rotated component, Varimax rotation; the reasons used for the interpretation of the four components – high loads in bold, and secondary loads in bold italic)

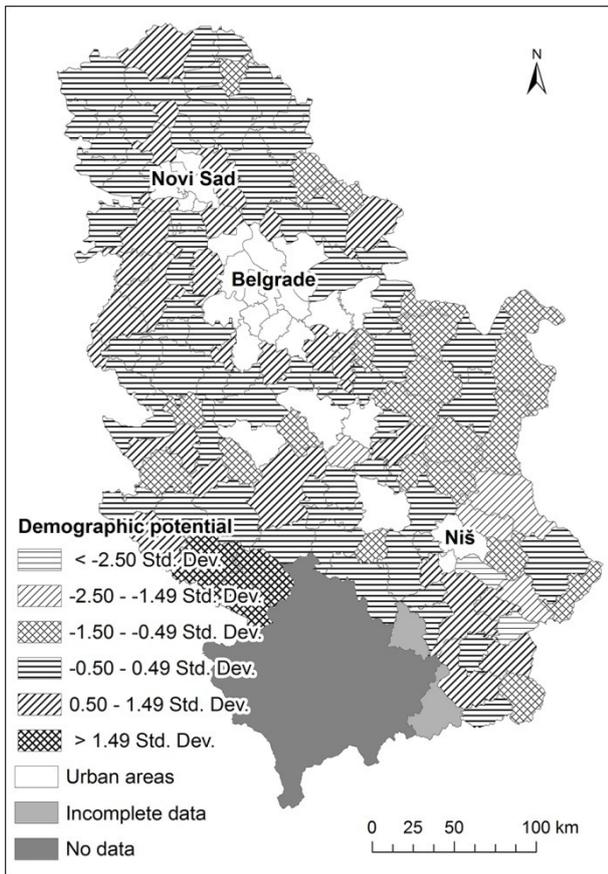| Variable	Demographic Potential	Agricultural Potential	Economic Potential	Urban Influence
Population density	**.534**	.097	.284	*.499*
Average household size	**.732**	-.373	-.291	-.060
Share of youth (0-19 years)	**.939**	.040	-.151	-.161
Share of old people (60+ years)	**-.903**	-.199	-.110	.007
Share of non-migrant population	.042	-.032	-.021	**-.653**
Natural increase rate	**.916**	.036	.159	.098
Share of employees	-.114	.021	**.790**	.210
Share of employees in primary sector	-.033	**.691**	-.360	-.084
Share of employees in secondary sector	-.080	*-.403*	**.625**	-.096
Share of unskilled population	-.211	**-.481**	-.289	*-.450*
Municipality share in Serbian investments	.231	.216	**.683**	.241
Road network density	.183	**-.698**	-.057	.082
Share of arterial roads	.088	**.591**	*.429*	-.295
Number of telephones per habitant	-.057	-.058	.093	**.636**
Share of agricultural land	.117	**.740**	-.177	.157
Municipality share in Serbian crop production	.128	**.785**	.222	.141
Percentage of explained variance	22.203	19.457	13.734	9.862

Figure 3. Component 1 – Demographic Potential
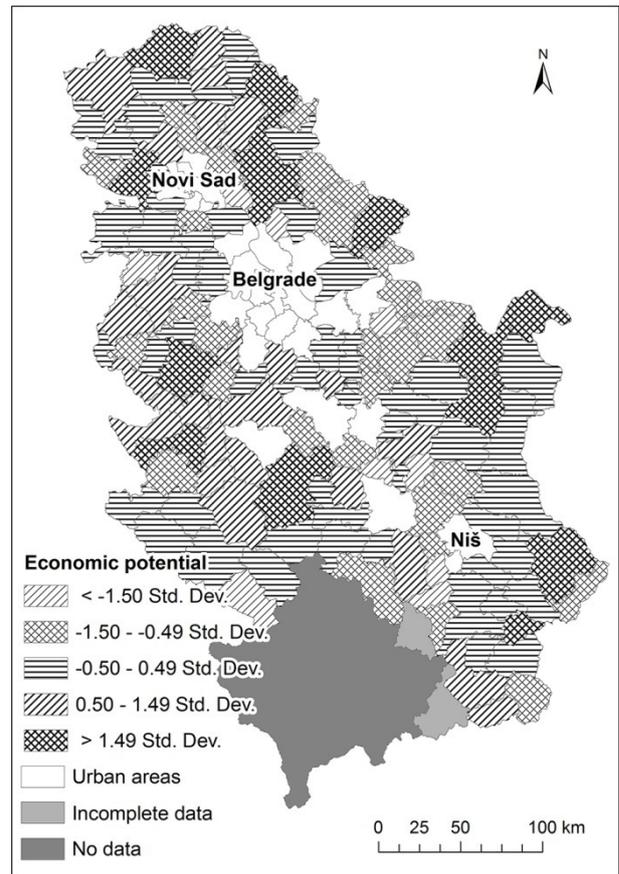

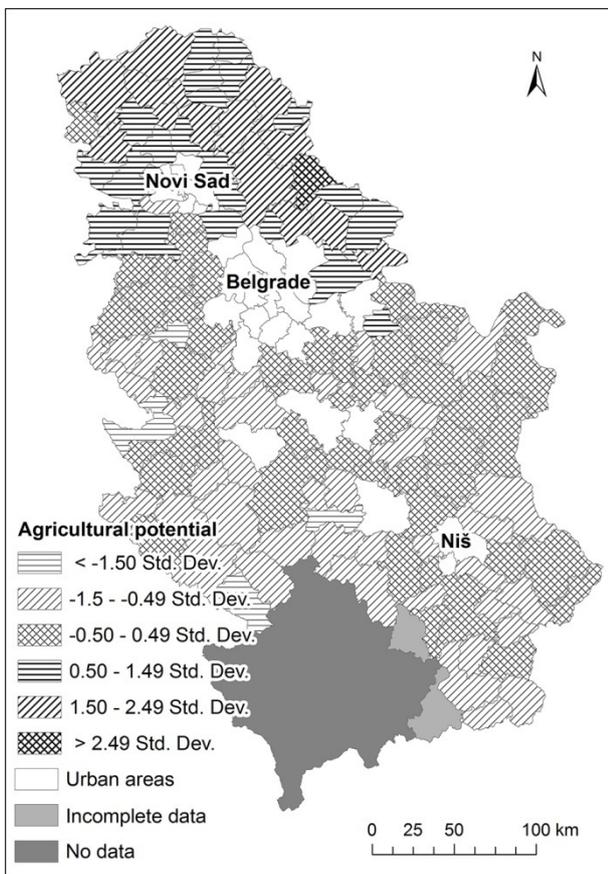Figure 5. Component 3 – Economic Potential

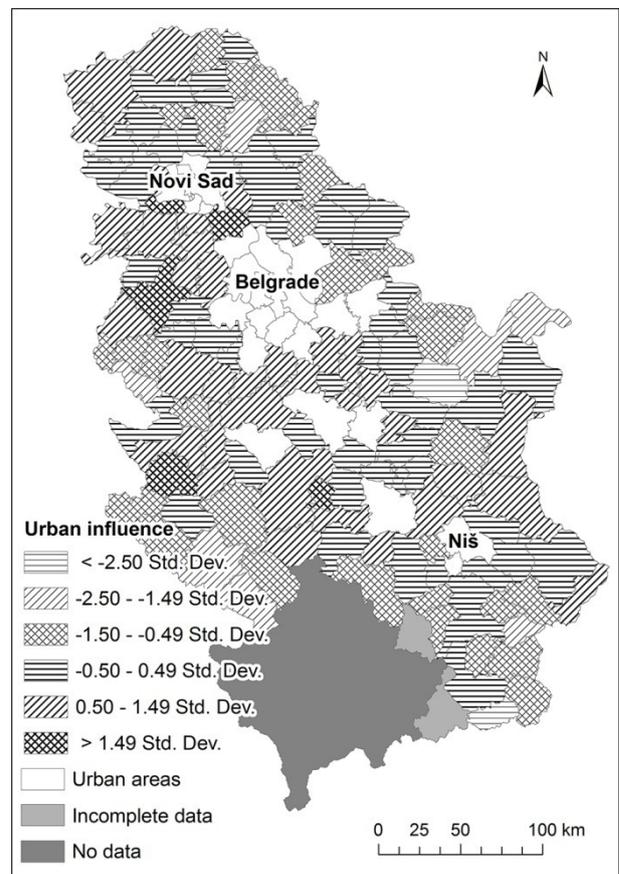Figure 4. Component 2 – Agricultural Potential

Figure 6. Component 4 – Urban Influence

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The second component explains the 19.457% of the total variance. It has a very high positive correlation with the variables which impose the agricultural characteristics. This factor is characterized by a high positive correlation with the municipality share in the Serbian crop production, share of agricultural land and share of the employed in primary sector. That is why we named this component *Agricultural Potential* (Fig. 4.). Additionally, there is a high positive correlation with the share of arterial roads. High negative loads relate to the road network density, the share of unskilled population and the share of the employed in the secondary sector. The spatial distribution of component scores indicates that municipalities with the highest values of this component are located in Vojvodina, which is traditionally the most developed agricultural area in Serbia.

The third component explains 13.734% of the total variance. In this case, the extremely high positive correlations indicate the variables relating to the municipality share in Serbian investments, the share of the employed persons in the total population and the share of the employees in the secondary sector. This factor also has a high positive correlation with the share of arterial roads. Because of the high positive correlations with the economic variables, we called this component *Economic Potential* (Fig. 5). The highest values are present in the economically developed municipalities. The lowest values of the component are in the demographically and economically shrinking areas in the eastern and southeastern parts of Serbia.

The fourth component explains only 9.862% of the total variance. It was derived from a positive correlation with the variables – number of telephones per inhabitant and population density, and a negative correlation with the variables – share of non-migrants and share of the unskilled population. Other variables have lower values. Because of that, this factor is the most difficult to denominate. According to the main characteristics, which are combined in high population density, urban infrastructure, and higher values concerning migrant population, skilled population, and the share of investments, we named this component *Urban Influence* (Fig. 6). In the rural areas of Serbia, extremely high values of this component are represented minimally. Relatively high values are in the municipalities in Central Serbia. On the other hand, the lowest values are present in the municipalities in border, peripheral and mountains regions in Serbia.

This research may represent a good starting point for precise quantitative typology of rural space in Serbia using additional multivariate methods such as cluster analysis. However, in this article we will stick to the discussion of the mapped spatial distribution of component scores (figures 3 to 6). This indicates zones that clearly should have different developing trajectories according to their attributes: 1) Southwest Serbia is predominated with demographic dimension, reflected in young population, high natural increase rate, and large households; 2) Northern part of Serbia (Vojvodina, mainly) clearly expresses its agricultural orientation and potential; 3) Areas with high shares of manufacture production and low unemployment rates, with inflow of investments, are dispersed, but located in areas adjacent to main transport infrastructure; 4) Sprawl of urban influence is obvious in rural municipalities near major Serbian urban agglomerations; 5) Mountainous, peripheral, and border areas express the deepest multifaceted decline, and they are represented with areas affected by extreme depopulation, population aging, economic shrinkage and insufficient infrastructural supply.

Southwestern Serbia (mainly Sandžak region) is predominantly inhabited by Muslim population, which is closely related to the great share of young population and the relatively high natural increase rate. This region was a part of the Turkish Empire until the beginning of the 20th century, and it has largely preserved the cultural-historical legacy of that time, such as family values, way of living, and rural architecture. Protection of cultural heritage might be valorized through planned tourism development.

This region is typified by underdeveloped agricultural structure, mostly based on exploitation of natural resources, particularly on cattle grazing. Majority of rural households mainly produce for their needs only, with insignificant surplus that could be sold on the market. Agriculture is not well integrated with the industrial sector that is dominated by small sized textile enterprises. Regarding environmental protection, it should be noticed that this region has rich ecosystems and biodiversity with the status of protected areas such as national parks, with obvious tourist potential. However, tourism development has to be well controlled in order to preserve this valuable natural recourse. Although economic and demographic pressure on the natural environment is not particularly high, there are indices of changes, mainly through suburbanization and traditional cattle grazing.

Northern Serbia (Vojvodina, mainly) is characterized by highly productive agriculture and

relatively well integrated economy. This region has favorable soil and climate conditions as well as adequate structure of agricultural production, with domination of activities based on more intensive use of capital, in comparison to the rest of Serbia. This is partly a consequence of historical Austro-Hungarian rule, when planned rural development was centrally determined (such as parceling, and irrigation and transport systems construction).

In relation to other areas in Serbia, this region has an advanced human potential, entrepreneurship initiatives, relatively diversified industrial sector, a developed physical and economic infrastructure. As a result, this rural region is the most economically developed in Serbia. However, the capacity of agriculture-related industry declined dramatically during the 1990s. Modernization and technological improvement of these industrial capacities should be some of the strategic priorities. The increase of industrial and agricultural investments inflows should play a significant role in the future sustainable development.

The third type of rural areas, comprising zones with high shares of manufacture, low unemployment rates, and inflow of investments, is located in areas adjacent to the main transport infrastructure. These areas are also mostly adjacent to the medium sized cities. Their evolution is related to the centralized planned industrialization of the socialist Serbia. The population capacity of these areas attracted limited resources devoted to industrialization, mostly by the construction of labor intensive industrial giants. This industrial capacity employed large number of inhabitants, causing dramatic decrease in agriculture production. These areas have advanced physical and social potential and infrastructure that explain significant investments inflows during the period of transition.

General economic structure is more favorable in relation to the rest of central Serbia. Important advantage should be the proximity of urban markets, guiding agriculture toward more intensive production of fruit, vegetable, and dairy farming. However, few municipalities on the east of Serbia based their economies on the affluent natural resources – mainly ore mining, with stressed ecological impact. Further sustainable development of these areas is particularly ecologically challenging.

The forth rural type is situated next to the main urban agglomeration. Included rural areas have been under the long lasting and strong urban influence, embodied through intensive transmission of urban features and functions. Urban employment opportunities caused immigration to be one of the most distinctive attributes of these areas. Massive and continuous immigration increased the population density and dramatically changed the landscape, gradually erasing its rural attributes. Sprawl of urban influences is correlated to the favorable education structure in these areas.

Social, physical and functional transformation under the strong urban influence determined their development trajectory. These areas will inevitably continue to gain urbanity attributes. Agriculture is going to lose its share in total employment. The remaining share has to be structurally changed, intensified and clearly market oriented. However, it is expected that these areas will eventually be transformed into urban regions.

Mountainous, peripheral, and border areas represent traditionally underdeveloped rural areas, formed by complex influences of natural, social, economic, demographic, cultural-civilization and political factors. Population and economic polarization in Serbia left them marginally affected by development (Miletić et al., 2009). During socialist times, these rural areas just continued to delay in social and economic aspects, intensifying their peripheral characteristics, defined by Cvijić (1991) as 'geographic characteristics of isolation and separation'. These areas have become 'desert islands' and 'problem regions' (Grčić, 1991), characterized by isolation, traditional monostructural economy, massive depopulation, and abandoning villages.

For mountainous, peripheral, and border areas it is difficult to establish a proper sustainable development strategy. Without adequate human resources, production capacities, and infrastructure, this region might pursuit better future in taking advantage of its preserved nature and cultural heritage, in order to develop ecologically sustainable tourism activity.

5. CONCLUSION

In order to understand multidimensionality, as well as fluidity and variability of rural areas, applied principal components analysis may be seen as highly convenient and efficient. This method allows researchers, experts, and practitioners, on one hand, to reduce the number of variables, capturing, as much as possible, the bulk of information contained in the original data. On the other hand, it enables them to make an important step towards deeper understanding of a complex and multidimensional territory such as, in this case, rural space.

Methodology applied in the article allowed us to highlight the multidimensional nature of heterogeneity and particularities of the vast rural

space in Serbia. This kind of scarce research is of significant importance in Serbia, which still propagates, through strategies and planning documents, uniform 'cure' for rural areas – simple but vague (re)development through investments into tourism and agriculture. However, as it is presented here, four distinctive components indicating five zones, obviously express different potentials and obstacles that should be considered prior to making any decisions on sustainable development strategies and starting their implementation.

Serbia, as a highly agrarian and insufficiently urbanized country in comparison to EU standards, is strongly dependent on the sustainable development of rural areas. Sustainable rural development must be seen as Serbian strategic priority in order to avoid deeper social and economic decline and crisis.

Serbian rural economy and society require sustainable and strong communities that are demographically balanced, with similar incomes and good employment opportunities. Serbian village should be a vivid village, adjustable to economic, social, political and ecological changes. This must not exclude the necessity to preserve cultural identities and traditions of rural communities. Serbian rural areas have to provide satisfactory quality of living in order to mitigate rural population shrinkage and decrease rural-urban migration, thus keeping agricultural households in rural areas. Serbia needs a demographically and economically sustainable village.

In order to prevent further regional disparities, Serbia should provide equal opportunities for the inhabitants of the rural areas, especially for the elderly, women and children, with accessible education, health care and other services. Strong social connection and specific policy measures should contribute to decreases in poverty and social exclusion. In other words, Serbia needs a socially responsible village.

In a modern democratic society, rural communities must not be neglected any more, but provided with active participation in relevant decision making processes. Serbia needs a politically influential and active village.

Serbian society, in general, has to increase its ecological awareness. It has to acknowledge the value of its natural environment and resources, especially in rural areas. The future growth and development of the rural economy has to be founded on the principles of sustainable development.

Strategies and trajectories in obtaining these common goals related to the sustainable rural development of Serbia, should not be universal, but adjusted to the diversity of obstacles and potentials acknowledged in this study.

Demographic and environmental capacities of southwestern Serbia have to be recognized and implemented in sustainable development policies. Strong demographic potential of this zone has to be valorized through adequate changes in educational and economical strategies. Additionally, the potential of preserved nature must not be exploited by spontaneous, but planned and ecologically sustainable tourism development.

Northern Serbia is the most developed part of the state. It is distinctive by its high agricultural productivity based on favorable natural and social conditions. This obvious agricultural potential should dictate its future development. Strategies should involve better integration of agriculture with the related industrial sector. Entrepreneurship initiatives and well educated human potential present a good base for future development and improvement in the economic structure of this zone.

Sustainable development strategies for the third and the forth indicated zones should be founded on their economic and human potentials, in relation to the urban proximity and influences. Urban – rural contacts have to be carefully considered. In the third zone, rural areas can continue to exist and develop with articulated dependencies on the neighboring cities, with diversification of economic activities, and highly productive and market oriented agriculture. In the forth zone, however, urban influence is over-pronounced, so it is difficult to imagine its rural future. Most likely, it will turn into urban space, with a small amount of rural features.

Mountainous, peripheral, and border areas are highly characterized by insufficient demographic and economic potential. Future sustainable development should evaluate and valorize their preserved cultural heritage as well as natural resources into, most likely, tourism oriented prospers. Rural revitalization in this zone has to be highly selective, focused on a limited number of villages that still preserve attributes of vitality.

Finally, all strategies aimed at rural sustainable development have to incorporate and utilize the status of Serbia as an EU candidate. Keeping in mind that the main goal of EU policies of rural development is to preserve the vitality of rural areas, it would be highly relevant for Serbia to apply the European model of agriculture, based on competitiveness, multifunctionality and sustainability. In the sphere of agriculture, the core idea of multifunctionality highlights the various roles that agriculture has – besides food production, it involves high food quality by implementing good agricultural practices, as well as preservation of

natural environment, thus contributing to the economic and social development of villages, and of the whole society.

Serbia lacks sustainable rural strategies based on the attributes and principles clarified in this study. The components and zones indicated in this analysis could represent the starting point in developing such strategies. Future work in this field should be directed toward a detailed typology of rural areas in Serbia at the level of settlements (local level), in order to obtain deep, comprehensive and accurate information, as a necessary phase in the knowledge based process of sustainable rural development.

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