IMPACT OF CHANGES IN ECONOMIC STRUCTURE ON THE TERRITORIAL AND DEMOGRAPHIC GROWTH OF SETTLEMENTS IN THE POST-SOCIALIST PERIOD, THE EXAMPLE OF NIŠAVSKI ADMINISTRATIVE DISTRICT

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Abstract. This paper analyzes impact of the changed socio-political and economical conditions in post-socialist period, to spatial, demographic and functional transformation of settlements in the case of Nišavski Administrative District. Based on census data and data from the current planning documents, a comparative analysis of interdependence between land use and demographic trends by the type of settlements is conducted in order to examine the extent to which modern principles of sustainability and urban sprawl control had been implemented. Considering that development takes place under the influence of multitude of factors changes in the economic structure were also analyzed. In the theoretical part of paper, the origin and development of the idea for restriction of urban sprawl was presented, along with an overview of the most important provisions of international conventions.

Key words: Spatial and urban planning, land use, urban sprawl

1. INTRODUCTION

Settlement formation is carried out under the influence of complex development and integration processes on one side, and environmental conditions on the other, and it cannot be understood without having a wider picture of the neighboring settlements and centers, as well as socio-economic and natural-geographic advantages and limitations. Considering the fact that the overview of the whole range of physical and functional factors that influence formation of settlement structures would be a too cumbersome task, the focus of this paper will be on the interdependence of economic and demographic trends and physical growth of settlements in the post-socialist period. The settlements of the Nišavski Administrative

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District will serve as an example to analyze how the altered socio-political circumstances have affected transformation of settlements, the extent to which their growth has been influenced by demographic or socio-economic factors, as well as the influence of ecological factors which were considered during the planning process of settlement development.

The cumbersome manufacturing systems were the main carriers of development in the socialist period which generated the rapid development and growth of urban areas, while in rural areas there was a strong migration of population into the cities and the abandonment of large areas of fertile agricultural soil. As a result of the transition to a market economy at the end of the last century, the decentralization of the economy have started, that caused closure of large industrial enterprises, and the accelerated development of the tertiary economy sector.

Structural changes in the world economy have additionally complicated the transition and caused a drop in production, employment and consequent discontinuity in the development of settlements. Problems have manifested in the form of urban sprawl, abandonment of urban cores, increased distance of residential areas from the administrative and business centers, forming of the satellite settlements, abandonment of industrial zones, and so on. Planning documentation frequently complied with the current state of affairs, whereas construction was conducted in accordance with contemporary requirements. In many cases, construction was spontaneous and haphazard, especially so in suburban areas along the major transportation routes, resulting in urban sprawl, often not taking natural resources into consideration. That trend for expansion of the build-up areas in relation to the agricultural is particularly evident in the new generation of spatial and urban planning documents.

2. DEVELOPMENT OF PARADIGMS OF SUSTAINABLE DEVELOPMENT

Numerous consequences of uncontrolled urbanization contributed to the development of environmental awareness, and the approach to development which focused on the unlimited use of land, believing that somewhere there would always be space suitable for expansion, gave way to the development that recognizes the ultimate extent of natural resources, and the consequences of their unrestricted use. Social needs and environmental requirements began to be observed simultaneously with the economic development and developed an awareness that it is necessary to balance economic development with its social and environmental aspects.

In an effort to correct the negative aspects of these phenomena, a number of conventions and directives for controlling the development of settlements was adopted. Declaration of the United Nations Conference on the human environment from 1972 (Stockholm Declaration, 1972) was one of the first initiatives for solving problems caused by rapid consumption of resources, both through pollution in the developed world, and the population explosion in developing countries. At the United Nations Conference on Environment and Development “Earth Summit” of 1992, sustainable development was formally adopted as a standard by the international community, recognizing that “expanding human requirements and economic activities are placing ever-increasing pressures on land resources, creating competition and conflicts that are resulting in suboptimal use of land and land resources” (Mojović, Đ. et all., 2011, p. 20). The result of the conference was enormous and involved a set of global conventions on climate change and action program for the promotion of sustainability,
called "Agenda 21" (UNCED, 1992), which states that an integrated approach to planning and management of land resources, popularly known as land use planning, is essential for achieving this goal.

The currently prevailing tendency in spatial and urban planning is creation of a sustainable system in which development takes place within the available capacity of the environment. According to the Law on Strategic Environmental Assessment, sustainable development is defined as a "development that meets the needs of present generations without jeopardizing the possibilities of future generations to satisfy their needs". Sustainable development is evolving through three components: economy, social and environment. It is based on the assumption that only through balanced actions it can be possible to simultaneously manage human resources, achieve economic development, and avoid inequality that endangers the social side of society, justice and security.

Sustainability as a key criterion for assessing the quality of spatial development represents a complex system of relations to nature and the environment, resources and activities based on their use, protected values, traditions, identity and specific socio-cultural characteristics, aiming to preserve and enhance the quality of the environment. In development planning, it is imperative that impacts on the environment are kept in the range in which the environment can absorb them, so social needs and environmental requirements have been viewed upon alongside economic development. A modern planning approach requires observation of the "entire society as a compound and dynamic unity because urban space should meet the complex and never static needs of its residents" (Marković, D. 2010).

In urban areas these principles are manifested as smart growth that concentrates growth in compact walkable urban centers to avoid sprawl. This approach to the development of urban areas is conceived as an alternative to urban sprawl – the extensive and discontinuous occupation of the undeveloped land that leaves serious consequences for the environment and the ecology, as well as in the social and economic areas. Compact settlements, transport availability, mixed land uses, reuse, and healthy communities are its basic principles.

3. RESULTS ANALYSIS

In response to the economic, technological and social impacts, processes of transformation that are reflected on the structure of the settlement are taking place on a daily basis. These changes are largely determined by their character and position, so this chapter will examine the correlation between demographic trends of the total and agricultural population, a predominant occupation of the population, economic development and growth of urban and rural settlements, taking the settlements of the Niš Administrative District as an example.

Nišavski Administrative District is characterized by highly favorable geographical position at the crossroads of industrial development axles of I and II level, and international traffic corridors of E-75 and E-80. It includes the City of Niš, that from 2006 functions as a community of five city municipalities (the Medijana, Palilula, Pantelej, Crveni Krst and Niška Banja), and the municipalities of Aleksinac, Gadzin Han, Doljevac, Merošina, Razanj and Svršajg.

For research purposes, and in order to adjust to the census data, settlements are differentiated on the municipal centers and other - rural settlements. According to the official census methodology, there are no urban areas in the municipalities of Gadzin Han, Doljevac,
Merošina, and Ražanj. Therefore, the settlements stipulated as the centers of local governments by the urban plans were displayed as the urban settlements, for the purpose of differentiation between the municipal centers and other settlements. Such settlements are: for the municipality of Gadzin Han the settlement of Gadzin Han, for the municipality of Doljevac, settlements of Doljevac, Kočane and Orljane, for the municipality of Merošina, settlements of Merošina and Brest, and for the municipality of Ražanj, settlement Ražanj, in tables all marked as “Urban*”.

The analysis data were used from the 2002 and 2011 Census, as well as municipal annuals (Municipalities in Serbia 2002-2010 and Municipalities and Regions in Serbia 2011-2012), while the current planning documentation that regulates land use and manner of spatial development was used as an indicator of the contemporary necessities for construction area. For municipal centers, which are in accordance to the Law on Planning and Construction elaborated through master plans and general regulation plans, as well as for the other settlements that have been subject of urban elaboration by lower level plans, data from these plans were used. For other settlements as a data source for the surface of the construction area, along with data from municipal annuals the data from spatial plans of local governments in the areas where they apply on the basis of schematic views of settlements development were used.

### 3.1. Demographic developments

The analysis of demographic developments was based primarily on the 2002 and 2011 census results, but given that the data on the number of agricultural population in the 2011 census had not been published by the settlements, but only by municipalities and regions, they were obtained from the Statistical Office of the Republic of Serbia by the special request (Application No. 9485).

However, changes in the methodology of gathering and classification of census data have hampered to some extent analysis of the results. For example, there is no absolute comparability of results in the areas of the economically active population and in the classification of households according to the income sources between the 2002 census and 2011 census. In addition, according to the methodology of the 2002 census, data on the number of population and number of households in urban areas of the City of Niš, without municipality of Niška Banja, were shown collectively.

Demographic trends had different characteristics within the Nišavski Administrative District. Until the seventies of the last century, most rural settlements had a positive population growth, but primarily due to the emigration of the part of reproductive-age population, a trend of population decline emerged. At the same time the economic structure of Niš emerged on the foundations of traditional, labor-intensive activities (metal, tobacco, textiles, brick, milling, wood processing, etc.) has created an employment opportunities for large redundant workforce from agriculture, thus opening pathways for an intense mechanical population growth (Table 1).

After that period, the process of extension of urban influences from the city core to suburban areas has begun, which due to lack of space and essential infrastructure in the urban tissue, became a new destination for migrants. This phenomenon has caused their demographic growth followed by intensive housing construction and socio-economic transformation expressed through the reduction of participation of agricultural population in the total and active population (Table 2).
## Table 1 Number of agricultural population by municipalities and settlement type

| Administrative District | City-municipality | Settlement type | Agricultural population | Its share in total population % | Active agr. population that conducts activity | Its share in total agr. population % | Share of agr. population on in total pop. | Share of the active agr. population in total agr. pop. | 2002 | 2011 | 2002 | 2011 | 2002 | 2011 | 2002 | 2011 | Ratio% 2002/2011 |
|-------------------------|-------------------|-----------------|-------------------------|--------------------------------|-----------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------------------|
| Nišavski A. D.         |                   | Urban           | 215456                  | 0.65                           | 654                                           | 324                               | 46.98                             | 39.27                           | -40.00| -16.41|
|                         |                   | Other           | 166301                  | 17.40                          | 7.60                                          | 21091                            | 7131                              | 57.49                           | -56.32| -21.15|
| The City of Niš         |                   | Urban           | 218068                  | 0.29                           | 191                                           | 73                                | 36.31                             | 28.85                           | -55.17| -20.55|
|                         |                   | Other           | 70450                   | 1.76                           | 3478                                          | 578                              | 75.61                             | 45.26                           | -73.05| -40.14|
| Medijana                |                   | Urban           | 27                       | 0.61                           | 19                                            | 2.70                              | 30.50                            | -85.25                           | -28.95|
|                         |                   | Other           | 1055                    | 6.00                           | 2.23                                          | 697                               | 145                               | 66.07                           | -62.83| -48.84|
| Palilula                |                   | Urban           | -                        | 0.67                           | 162                                           | 169                               | 49.13                             | -                    | -|
|                         |                   | Other           | 1463                    | 9.90                           | 1.55                                          | 1188                              | 149                               | 81.20                           | -84.34| -36.95|
| Pantelej                |                   | Urban           | -                        | 0.64                           | 169                                           | 49.13                             | -                    | -|
|                         |                   | Other           | 1719                    | 6.98                           | 2.46                                          | 1310                              | 260                               | 76.21                           | -64.76| -29.94|
| Niška Banja             |                   | Urban           | 37                      | 0.83                           | 22                                            | 50.00                             | 18.18                             | -69.88                           | -63.64|
|                         |                   | Other           | 336                     | 3.08                           | 0.64                                          | 264                               | 22                                | 87.88                           | -79.22| -62.07|
| Aleksinac               |                   | Urban           | 208                     | 1.12                           | 0.47                                          | 107                               | 25                                | 37.38                           | -58.04| -20.39|
|                         |                   | Other           | 1147                   | 29.33                          | 14.93                                         | 7871                              | 2643                              | 97.73                           | -49.10| -46.54|
| Gadjin Han              |                   | Urban           | 1458                    | 13.93                          | 10.25                                         | 1159                              | 647                               | 99.05                           | -26.42| -24.05|
|                         |                   | Other           | 1429                    | 15.50                          | 11.86                                         | 1140                              | 639                               | 99.12                           | -23.48| -24.15|
| Đoljevac                |                   | Urban           | 1507                    | 7.70                           | 4.23                                          | 927                               | 318                               | 96.33                           | -45.06| -57.73|
|                         |                   | Other           | 1268                    | 8.61                           | 3.76                                          | 787                               | 192                               | 96.57                           | -56.33| -61.91|
| Merošina                |                   | Urban           | 3141                    | 21.21                          | 12.72                                         | 2144                              | 997                               | 96.60                           | -40.03| -41.92|
|                         |                   | Other           | 144                    | 10.03                          | 5.30                                          | 86                                | 30                                | 56.51                           | -47.16| -31.06|
| Ražanj                  |                   | Urban           | 2979                   | 1700                           | 14.53                                         | 2058                              | 967                               | 96.60                           | -39.60| -41.12|
|                         |                   | Other           | 3612                   | 2352                           | 37.94                                         | 2646                              | 1681                              | 97.24                           | -19.95| -25.65|
| Svrljig                 |                   | Urban           | 3702                   | 21.42                          | 5.52                                          | 3161                              | 489                               | 98.77                           | -74.23| -37.02|
|                         |                   | Other           | 3552                  | 37.08                          | 10.04                                         | 3111                              | 431                               | 99.13                           | -72.92| -35.30|

Source: 2002 Census of Population, Households and Dwellings in the Republic of Serbia, ISBN 86-84433-20-3, 2011 Census of Population, Households and Dwellings in the Republic of Serbia, Statistical Office of the Republic of Serbia, Application nr. 9485
The City of Niš and its suburbs had a significant demographic growth, until the last decade of the twentieth century, when due to the transition and unstable economic situation, for the first time in modern history negative demographic movements were recorded.

### Table 2: Comparative overview of number of population

| Administrative District | Number of population | Ratio% 2002/2011 |
|-------------------------|-----------------------|------------------|
| **City – municipality** |                       |                  |
| Settlement type         | 1948 | 1953 | 1961 | 1971 | 1981 | 1991 | 2002 | 2011 |
| Nišavski A. D.          | 283842 | 303482 | 327367 | 363292 | 394110 | 396043 | 381757 | 376319 | -1.42 |
| Urban                   | 63056 | 75423 | 101408 | 125888 | 192981 | 214529 | 215109 | 221582 | 3.01 |
| Other                   | 220786 | 228059 | 225999 | 210431 | 201129 | 181514 | 166648 | 154737 | -7.15 |
| The City of Niš         | 109280 | 122100 | 148354 | 195362 | 232563 | 248086 | 250518 | 260237 | 3.89 |
| Urban                   | 48206 | 57757 | 80703 | 127395 | 161180 | 179828 | 180068 | 187544 | 4.15 |
| Other                   | 61074 | 64343 | 67651 | 67967 | 71383 | 68258 | 70450 | 72693 | 3.18 |
| Medijana                | 22907 | 27323 | 38232 | 60627 | 77252 | 86626 | 87405 | 85969 | -1.64 |
| Urban                   | 22339 | 26728 | 37177 | 58692 | 74307 | 82961 | 82953 | 81327 | -1.96 |
| Other                   | 568 | 595 | 1055 | 1935 | 2945 | 3665 | 4452 | 4642 | 4.27 |
| Palilula                | 26696 | 30517 | 37876 | 52277 | 64465 | 71035 | 72165 | 73801 | 2.26 |
| Urban                   | 14702 | 17591 | 24468 | 38628 | 48906 | 54602 | 54596 | 54597 | 0.00 |
| Other                   | 12267 | 12926 | 13408 | 13649 | 15559 | 16433 | 17569 | 19204 | 9.14 |
| Pantelej                | 25774 | 27631 | 31851 | 38132 | 44110 | 41595 | 42137 | 53486 | 26.93 |
| Urban                   | 6756 | 8084 | 11244 | 17752 | 22475 | 25093 | 25090 | 34724 | 38.40 |
| Other                   | 19018 | 19547 | 20607 | 20380 | 21676 | 16502 | 17047 | 18762 | 10.06 |
| Crveni Krst             | 21224 | 23757 | 26134 | 29829 | 32034 | 33881 | 34542 | 32301 | -3.44 |
| Urban                   | 3499 | 4186 | 5823 | 9192 | 11638 | 12993 | 12992 | 12516 | -3.66 |
| Other                   | 17725 | 19571 | 20311 | 20637 | 20396 | 20888 | 20460 | 19785 | -3.30 |
| Niška Banja             | 12406 | 12872 | 14261 | 14497 | 14661 | 14949 | 15359 | 14680 | -4.42 |
| Urban                   | 910 | 1168 | 1991 | 3131 | 3854 | 4179 | 4437 | 4380 | -1.28 |
| Other                   | 11496 | 11704 | 12270 | 11366 | 10807 | 10770 | 10922 | 10300 | -5.69 |
| Aleksinac               | 61002 | 64344 | 67200 | 66082 | 67286 | 68444 | 57749 | 51863 | -10.19 |
| Urban                   | 6871 | 8939 | 11289 | 13968 | 17661 | 18675 | 18638 | 17978 | -3.54 |
| Other                   | 54131 | 55455 | 55911 | 52114 | 49625 | 45169 | 39111 | 33885 | -13.37 |
| Gadzin Han              | 26380 | 26182 | 23965 | 19974 | 16281 | 12990 | 10464 | 8389 | -19.83 |
| Urban*                  | 931 | 951 | 879 | 903 | 997 | 1131 | 1245 | 1223 | -1.77 |
| Other                   | 25449 | 25231 | 23086 | 19071 | 15284 | 11859 | 9219 | 7166 | -22.27 |
| Doljevac                | 17641 | 18825 | 19860 | 20228 | 20663 | 19561 | 18463 | 15836 | -5.61 |
| Urban*                  | 3329 | 3549 | 3908 | 4381 | 4673 | 4847 | 4828 | 4587 | -4.99 |
| Other                   | 14312 | 15276 | 15992 | 15874 | 15990 | 15815 | 14733 | 13876 | -5.88 |
| Merošina                | 18326 | 19469 | 18899 | 18028 | 17489 | 16139 | 14812 | 13968 | -5.70 |
| Urban*                  | 1093 | 1196 | 1258 | 1370 | 1546 | 1552 | 1435 | 1452 | 1.18 |
| Other                   | 17233 | 18273 | 17641 | 16658 | 15943 | 14587 | 13377 | 12516 | -6.44 |
| Ražanj                  | 18931 | 19623 | 18829 | 17113 | 15586 | 13582 | 11369 | 9150 | -19.52 |
| Urban*                  | 1008 | 1102 | 1159 | 1308 | 1331 | 1370 | 1537 | 1245 | -19.00 |
| Other                   | 17923 | 18521 | 17670 | 15805 | 14255 | 12212 | 9832 | 7908 | -19.6 |
| Svrilj                  | 32282 | 32939 | 30260 | 26505 | 24242 | 20740 | 17284 | 14249 | -17.56 |
| Urban                   | 1618 | 1929 | 2212 | 3563 | 5593 | 7126 | 7358 | 7553 | 2.65 |
| Other                   | 30664 | 31010 | 28048 | 22942 | 18649 | 13614 | 9926 | 6969 | -32.54 |

Source: 2011 Census of Population, Households and Dwellings in the Republic of Serbia, Comparative overview of the number of population in 1948, 1953, 1961, 1971, 1981, 1991, 2002 and 2011, Statistical Office of the Republic of Serbia, ISBN 978-86-6161-109-4
Table 2, shows changes in agricultural population, its share in total population, as well as a share of active agricultural population that conducts activity in the total agricultural population, by municipalities and settlement types according to census results from year 2002 and 2011.

A slight increase in the agricultural population that is not accompanied by an increase in the total is noticeable, while the share of it declined at the regional level for 55.67%, both in urban settlements (-40.00%) and in the other settlements (-56.21%) where agriculture has traditionally been dominant source of income, and this trend is most pronounced in the City of Niš, considering its distinctly urban character.

3.2. Land use

Land area is one of the key elements of the environment and an important resource that is particularly threatened by human activities, such as: expansion of settlements, industrial, mining, energy and transport facilities, water erosion, wind erosion, soil salinization, loss of nutrients, chemical pollution from bio sources, mechanical compaction of soil during the processing of heavy machinery, water logging of land, floods, loss of fertility, etc. (National strategy on sustainable development of the Republic of Serbia, 2008).

In this chapter, the analysis will be focused on the impact of settlement expansion through the comparison of changes in surface of the built-up areas of settlements, as well as changes in surface of the agricultural area and its share in total area, with a focus on the period from year of 2002 to 2011, that preceded the preparation of the current planning documents.

According to the Law on Planning and Construction, built-up area represents built and regulated part of the settlement, as well as the undeveloped part of an area scheduled for protection, renovation or construction of buildings, and the town is defined as built, functionally unified space, in which conditions are provided for life and work of people and which is satisfying the mutual needs of inhabitants with urban elements.

### Table 3 The balance of basic land uses in the area of Nišavski Administrative District

| Territorial unit       | Existing use/Planned use | Agricultural land (km²) | Forests and forestry land (km²) | Other, infertile land (km²) | Total area (km²) |
|------------------------|--------------------------|-------------------------|---------------------------------|-----------------------------|-----------------|
| Nišavski Administrative District | Existing use           | 1733                    | 726                             | 268                         | 2727            |
|                         | Planned use              | 1610                    | 782                             | 335                         | 2727            |
|                         | Difference               | -123                    | 56                              | 67                          | 0               |
|                         | Ratio (%)                | -7.10                   | 7.71                            | 25.00                       | 0.00            |

Source: Regional spatial plan for the area of Nišavski, Toplički, and Pirotski Administrative District

Analyzing the balance of surfaces at the level of Nišavski Administrative District (Table 3) a trend of increase of building land presented together with other infertile land by 25% can be observed, mainly at the expense of the agricultural land, that in the regional plan of covered local government units had decreased by 123%.
Of Doljevac that increase is 4, trend of a slight decline in all municipalities except for the City of Niš.

| Administrative District | Agricultural area - farms, businesses and cooperatives |
|-------------------------|--------------------------------------------------------|
| **City-municipality**   | **Agricultural land area** (ha) | **Ratio (%)** |
| Nišavski A. D.          | 173823 173361 173363 173473 174011 173742 173733 173310 173003 173788 -0.02 |
| The City of Niš         | 36996 37000 36827 36749 37837 37972 37951 37869 37836 37642 1.75 |
| Medijana                | 30193 30169 30034 705 796 796 992 785 932 889 26.10 |
| Palilula                | 7395 7456 7571 7363 7510 7377 7362 -0.45 |
| Pantelej                | 9157 9280 9277 9282 9258 9255 9237 0.83 |
| Crveni Krs              | 12697 12893 12920 12926 12906 12867 12905 1.64 |
| Niška Banja             | 6803 6831 6793 6795 7412 7408 7388 7410 7405 7249 6.56 |
| Aleksinac               | 45429 45539 45463 45408 45117 45022 45199 45022 45075 45416 -0.29 |
| Gadžin Han              | 18228 18213 18201 18137 17849 17577 17638 17241 17085 17631 -3.27 |
| Doljevac                | 9143 9126 9161 9161 9214 9184 9184 9184 9186 9527 4.20 |
| Merošina                | 14703 14618 14685 14670 14718 14759 14686 14618 14620 14578 -0.85 |
| Ražanj                  | 17092 17099 17084 17083 17158 17113 17056 17093 17082 17071 -0.12 |
| Sviljig                 | 32232 32266 32212 32265 32118 32115 32029 32108 32119 31923 -0.96 |

**Table 5** The share of agricultural land total area - farms, businesses and cooperatives.

| Administrative District | The share of agricultural land area in total area (%) | **Ratio (%)** |
|-------------------------|------------------------------------------------------|---------------|
| Nišavski A. D.          | 63.7 63.7 63.7 63.8 63.8 63.7 63.7 63.6 63.5 63.8 0.2 |
| The City of Niš         | 62.0 62.0 61.7 61.7 61.7 63.7 63.7 63.4 63.4 63.1 1.8 |
| Medijana                | 44.1 44.1 16.2 16.2 2.6 3.1 3.0 -9.3 |
| Palilula                | 71.0 71.0 83.2 83.2 60.6 59.5 62.9 -11.4 |
| Pantelej                | 61.4 61.4 67.7 67.7 65.2 65.2 65.0 5.86 |
| Crveni Krs              | 69.9 69.9 74.3 74.3 70.9 70.9 70.9 1.43 |
| Niška Banja             | 46.9 46.9 46.8 47.0 51.1 51.1 50.8 50.7 50.0 6.61 |
| Aleksinac               | 64.1 64.1 64.7 64.3 64.0 63.9 63.9 64.6 64.4 64.9 1.25 |
| Gadžin Han              | 56.0 56.0 56.0 56.2 54.9 54.1 54.1 53.0 72.7 54.2 -3.21 |
| Doljevac                | 76.0 76.0 76.3 75.6 76.1 75.9 75.9 75.9 75.9 75.8 3.55 |
| Merošina                | 76.2 76.2 76.1 76.0 76.3 76.5 76.5 75.7 75.8 75.5 -0.92 |
| Ražanj                  | 59.2 59.2 59.1 59.6 59.6 59.2 59.2 59.1 59.1 59.1 0.17 |
| Sviljig                 | 65.0 65.0 64.7 65.1 65.1 64.6 64.6 64.5 64.5 64.1 -1.38 |

Source: Municipalities in Serbia, 2002-2010, and Municipalities and regions in Serbia, 2011-2012, Statistical Office of the Republic of Serbia

If we observe how agricultural land ranges in statistical data (Table 4 and Table 5), the trend of a slight decline in all municipalities except for the City of Niš and Municipality of Doljevac can be noted. In the city of Niš agricultural land had increased by 1.75%, and its share of total surface area had increased from 62.00% to 63.10%, while in the municipality of Doljevac that increase is 4.20% and from 76.00% to 78.70%, respectively.
The trend of increase of agricultural land in The City of Niš and municipality of Doljevac cannot be associated with the expansion of the construction area in them for 61.98% and 71.72% (Table 6), but is consequence of the influence of the city of Niš as industrial center with developed industries and agribusiness, in which primary agricultural production is directly supported.

**Table 6** Comparative review of construction area enlargement and demographic developments

| Administrative District | City-municipality | Total area (km²) | Construction area (ha) | Ratio 2002/2011 (%) | Construct land area | Agricultural land area | Number of population |
|-------------------------|-------------------|-----------------|------------------------|---------------------|---------------------|-----------------------|---------------------|
| Nišavski A. D.          | 2729              | 24076.01        | 39745.46               | 15671.45            | 65.09               | -0.02                 | -1.42               |
| Urban                   | 12188.20          | 19791.81        | 7633.61                | 62.63               | 3.01                |                       |                     |
| Other                   | 11887.81          | 19953.65        | 8037.84                | 67.61               | -7.15               |                       |                     |
| The City of Niš         | 597               | 13137.00        | 21148.00               | 8011.00             | 60.98               | 1.75                  | 3.89                |
| Urban                   | 10142.18          | 16142.21        | 6000.03                | 59.16               | 4.15                |                       |                     |
| Other                   | 2994.82           | 5005.79         | 2010.97                | 67.15               | 3.18                |                       |                     |
| Aleksinac               | 707               | 5452.54         | 8912.91                | 3460.37             | 63.46               | -0.29                 | -10.19              |
| Urban                   | 1262.79           | 2067.63         | 804.84                 | 63.73               | -3.54               |                       |                     |
| Other                   | 6779.69           | 6845.28         | 2655.53                | 39.17               | -13.37              |                       |                     |
| Gadjin Han              | 325               | 1204.00         | 2690.00                | 1486.00             | 123.42              | -3.27                 | -19.83              |
| Urban*                  | 120.00            | 184.68          | 64.68                  | 53.90               | -1.77               |                       |                     |
| Other                   | 1084              | 2505.32         | 1421.32                | 131.11              | -22.27              |                       |                     |
| Doljevac                | 121               | 990.00          | 1700.00                | 710.00              | 71.72               | 4.20                  | -5.61               |
| Urban*                  | 166.64            | 503.43          | 336.79                 | 202.11              | -4.99               |                       |                     |
| Other                   | 823.36            | 1196.57         | 373.21                 | 45.33               | -5.88               |                       |                     |
| Merošina                | 193               | 1039.68         | 1842.88                | 803.20              | 77.25               | -0.85                 | -5.70               |
| Urban*                  | 129.74            | 219.79          | 90.05                  | 69.41               | 1.18                |                       |                     |
| Other                   | 909.94            | 1623.09         | 713.15                 | 78.37               | -6.44               |                       |                     |
| Ražanj                  | 289               | 827.70          | 1039.10                | 211.40              | 25.54               | -0.12                 | -19.52              |
| Urban*                  | 116.58            | 167.86          | 51.28                  | 43.99               | -19.00              |                       |                     |
| Other                   | 711.12            | 871.24          | 160.12                 | 22.52               | -19.6               |                       |                     |
| Svršić                  | 497               | 1425.09         | 2412.57                | 989.48              | 69.43               | -0.96                 | -17.56              |
| Urban                   | 250.27            | 506.21          | 255.94                 | 102.26              | 2.65                |                       |                     |
| Other                   | 1174.82           | 1906.36         | 733.54                 | 62.44               | -32.54              |                       |                     |

Source: The Republic Geodetic Authority of Serbia- Central Registry of planning documents, Calculations

The data on “Agricultural land area” and “Number of population” in the last two columns of Table 6 are taken from Table 4 And Table 1 respectively.

It should be noted that the Master Plan of the City of Niš 2010-2025 had increased the territorial coverage from 18 settlements that were covered by Master Plan of Niš 1995 (the City of Niš and 17 suburbs), to 37 settlements (two urban, 10 suburban and 25 rural settlements), but the last column of the Table 6 for the City of Niš displays official census results of settlements that have been listed as urban in 2002 and 2011 census.

Spatial plan of The City of Niš 2021 had defined land use in most of the rural settlements through the schematic views of settlements development, but land use in 22 urban settlements, other than ones developed through the Master Plan of The City of Niš 2010-
2025, was planned to be conducted through general regulation plans, which are mostly in the process of creation, so that data was unavailable at the moment of making this paper.

The increase of the built-up land area (Table 6) is high in all municipalities, as well as at the regional level, and it amounts to 65.09%, while in the municipality of Gadzin Han is as high as 123.00%. Demographic movements on the other hand do not show a positive trends, except in the city of Niš, where a slight increase in population by the 3.89% is recorded (Table 2), while in the municipality of Gadzin Han it is the most negative in the region, with -18.83%, so it cannot be considered an explanation of mentioned phenomenon.

If we consider the ratio of expansion of construction land area in urban and other settlements (Table 6) it is noticeable that it is uniform at the regional level with 62.63% in urban, and 67.61% in rural settlements, which implicate possible changes in the economy structure.

The situation is similar in the City of Niš (59.16% in urban areas and 67.15% in other settlements), but the municipality Gadzin Han, in which the construction land area of other settlements had increased by as much as 131.11% deviates from the average data, while in the municipalities of Doljevac and Svrljig situation is reversed and construction land area of urban settlements recorded the largest increase (202.11% and 102.26%, respectively).

3.3. Economy

For the analysis of economic trends, the data on the economically active population performing an occupation by activities and on the households according to income sources from the 2002 and 2011 census were used. Given that mentioned data were not published by settlements in the 2011 census, they have been obtained from the Statistical Office of the Republic of Serbia by special requests (Application No. 9485, and Application No 10625).

The Table 7 shows how the restructuring of the economy reflected to municipal centers and as in other areas, while the Table 8 shows the developments in the number of households by sources of income in the observed period from year 2002 to 2011 by municipalities and settlement types.

By observing the development of non-agricultural activities and agriculture as a traditional economic activity through the change of the number of economically active population performing an occupation by sectors, despite the differences in methodology of data collection and sorting, a drastic decline in the number of persons performing activities in the field of agriculture may be noticed, both at the regional level and at the level of municipalities.

According to the 2002 Census methodology, census data for urban settlements of the City of Niš were not displayed by different City Municipalities, but instead together, for the whole urban area, given that municipality of Niška Banja until the year 2004 existed as independent municipality separate of the City of Niš.

Due to changes in methodology of the 2002 and 2011 Census, there is no absolute comparability of the results displayed in columns “Mixed incomes” and „Personal Incomes“, however comparing the data on income sources for households in agriculture and non-agriculture given by the municipalities, and settlement types, an identical trend can be observed, both in urban and in rural areas (Table 9), which all confirms the fact that population of rural settlements is turning to alternative activities carried out either as a primary or as supplemental activity to agricultural production.
### Table 7 Economically active population that perform occupation by the industry

| Industry                                      | Nišvara AD | The City of Niš | Aleksinac | Gadžin Han | Doličevac | Merčašina | Ražanj | Svržig |
|-----------------------------------------------|------------|-----------------|-----------|------------|-----------|-----------|--------|--------|
| Agriculture, forestry and fishing             | 8380       | 933             | 2881      | 702        | 360       | 1070      | 1865   | 569    |
| Mining and quarrying                          | 389        | 121             | 248       | 0          | 15        | 2         | 3      | 0      |
| Manufacturing                                 | 18837      | 13026           | 2400      | 482        | 879       | 669       | 449    | 932    |
| Electricity, gas and steam supply             | 1363       | 1095            | 116       | 19         | 46        | 41        | 12     | 34     |
| Water supply, sewerage, and waste man.        | 2181       | 1461            | 322       | 44         | 145       | 131       | 26     | 52     |
| Construction                                  | 5886       | 3866            | 913       | 160        | 337       | 233       | 172    | 205    |
| Wholesale, retail trade and repair            | 16596      | 13556           | 1387      | 163        | 564       | 307       | 221    | 398    |
| Transportation and storage                    | 6686       | 5254            | 584       | 77         | 275       | 213       | 134    | 149    |
| Accommodation and food service                | 2971       | 2419            | 263       | 29         | 64        | 60        | 55     | 81     |
| Information and communication                 | 2371       | 2201            | 110       | 7          | 20        | 8         | 8      | 17     |
| Financial and insurance activities            | 1916       | 1765            | 89        | 14         | 10        | 9         | 12     | 17     |
| Real estate activities                        | 122        | 112             | 5         | 0          | 2         | 3         | 0      | 0      |
| Professional, scientific and technical act.   | 3194       | 2701            | 235       | 46         | 64        | 60        | 42     | 46     |
| Administrative and support services           | 2232       | 1805            | 143       | 19         | 163       | 56        | 15     | 31     |
| Public administration and defense             | 10897      | 8767            | 892       | 163        | 391       | 311       | 118    | 255    |
| Education                                     | 9131       | 7573            | 886       | 71         | 213       | 139       | 101    | 148    |
| Human health and social work                  | 10677      | 8836            | 968       | 119        | 334       | 158       | 90     | 172    |
| Arts, entertainment and recreation            | 1375       | 1181            | 98        | 18         | 40        | 20        | 10     | 8      |
| Other service activities                      | 1848       | 1497            | 165       | 19         | 48        | 43        | 34     | 42     |
| Activities of households as employers         | 9          | 8               | 1         | 0          | 0         | 0         | 0      | 0      |
| Activities of extraterritorial organizations  | 23         | 21              | 2         | 0          | 0         | 0         | 0      | 0      |
| Unknown                                       | 608        | 333             | 201       | 8          | 31        | 20        | 10     | 5      |

Source: 2002 Census of Population, Households and Dwellings in the Republic of Serbia, Population – Activities and sex of the active population that performs occupation, Statistical Office of the Republic of Serbia, ISBN 86-84433-11-4; 2011 Census of Population, Households and Dwellings in the Republic of Serbia, POPULATION – Industry, Statistical Office of the Republic of Serbia, ISBN 978-86-6161-091-2
| Administrative District          | City-municipality | Settlement type | Total | Agriculture, hunting and forestry | Manufacturing | Wholesale, retail trade and repair | Other | Unknown | Total | Agriculture, hunting and forestry | Manufacturing | Wholesale, retail trade and repair | Other | Unknown |
|---------------------------------|-------------------|----------------|-------|----------------------------------|---------------|-----------------------------------|-------|---------|-------|----------------------------------|---------------|-----------------------------------|-------|---------|
| Nišavski A.D.                   |                   | Urban          | 129850| 22358                             | 32145         | 15684                             | 53508 | 6144    | 107692| 8380                             | 18837         | 16596                             | 63271 | 608    |
|                                 |                   | Other          | 57685 | 21427                             | 13276         | 4720                              | 16220 | 2040    | 38985 | 7760                             | 7998          | 5069                             | 17839 | 319    |
| The City of Niš                 |                   | Urban          | 85215 | 3869                              | 22818         | 12476                             | 41351 | 4693    | 78531 | 933                              | 13026         | 13556                             | 50683 | 333    |
|                                 |                   | Other          | 60899 | 299                               | 15182         | 9544                             | 32444 | 3422    | 59305 | 245                              | 8563          | 10199                             | 40078 | 220    |
| Medijana                        |                   | Urban          | 24316 | 3570                              | 0             | 7636                             | 2932  | 8907    | 1271 | 19226                           | 688           | 4463                             | 3357  | 113    |
|                                 |                   | Other          | 1563  | 23                                | 0             | 619                             | 199   | 648     | 74    | 1415                            | 8            | 312                             | 256   | 9      |
| Palić                             |                     | Urban          | 5543  | 727                               | 0             | 1767                             | 778   | 1955    | 316   | 5055                            | 178           | 1249                             | 1013  | 32     |
|                                 |                     | Other          | 16606 | 64                                | 2714          | 3014                             | 10743 | 71      |       |                                 |               |                                  |       |        |
| Pantelej                        |                     | Urban          | 5522  | 1216                              | 0             | 1523                             | 564   | 1870    | 349   | 5273                            | 181          | 1057                             | 928   | 33     |
|                                 |                     | Other          | 8207  | 1335                              | 0             | 2408                             | 991   | 3073    | 400   | 4793                            | 287          | 1155                             | 744   | 29      |
| Niška Banja                     |                     | Urban          | 4953  | 300                               | 5             | 1759                             | 659   | 2056    | 174   | 4002                            | 50           | 951                              | 647   | 14      |
|                                 |                     | Other          | 1472  | 31                                | 5             | 440                             | 259   | 695     | 42    | 1312                            | 16           | 261                             | 231   | 4       |
| Aleksinac                       |                     | Urban          | 3481  | 269                               | 0             | 1319                             | 400   | 1361    | 132   | 2690                            | 34           | 690                             | 416   | 56      |
|                                 |                     | Other          | 5797  | 189                               | 1             | 1631                             | 812   | 2718    | 446   | 5039                            | 92           | 1142                             | 701   | 43      |
| Gadin Han                       |                     | Urban          | 13935 | 7956                             | 2             | 1763                             | 814   | 3049    | 351   | 7807                            | 2789          | 1258                             | 686   | 158    |
|                                 |                     | Other          | 3240  | 1160                              | 0             | 1131                             | 119   | 713     | 117   | 2160                            | 702           | 482                             | 163   | 8      |
| Doljevac                        |                     | Urban          | 2766  | 1141                              | 0             | 922                             | 92    | 518     | 93    | 1777                            | 693           | 398                             | 121   | 599    |
|                                 |                     | Other          | 5231  | 938                               | 0             | 1455                             | 582   | 2170    | 86    | 4001                            | 360           | 879                             | 564   | 2167   |
| Merošina                        |                     | Urban          | 3127  | 148                               | 0             | 310                             | 196   | 649     | 24    | 1132                            | 131           | 189                             | 144   | 654    |
|                                 |                     | Other          | 3904  | 790                               | 0             | 1145                             | 386   | 1521    | 62    | 2869                            | 229           | 690                             | 420   | 1513   |
| Ražanj                          |                     | Urban          | 4854  | 2247                              | 0             | 833                             | 246   | 1358    | 170   | 3553                            | 1070          | 669                             | 307   | 1487   |
|                                 |                     | Other          | 459   | 99                                | 0             | 87                              | 42    | 217     | 14    | 383                             | 33           | 74                              | 60    | 212    |
| Svržig                          |                     | Urban          | 4395  | 2148                              | 0             | 746                             | 204   | 1141    | 156   | 3170                            | 1036          | 595                             | 247   | 1275   |
|                                 |                     | Other          | 4657  | 2746                              | 0             | 685                             | 282   | 883     | 61    | 3377                            | 1865          | 449                             | 221   | 832    |
| Other                           |                     | Urban          | 509   | 61                                | 0             | 113                             | 82    | 228     | 25    | 342                             | 17           | 58                              | 57    | 206    |
|                                 |                     | Other          | 4148  | 2685                              | 0             | 572                             | 200   | 655     | 36    | 3035                            | 1848          | 391                             | 164   | 626    |
| Other                           |                     | Urban          | 6921  | 3253                              | 0             | 1829                            | 353   | 1266    | 220   | 3161                            | 569           | 932                             | 398   | 1257   |
|                                 |                     | Other          | 2700  | 116                               | 0             | 1337                            | 261   | 837     | 149   | 2123                            | 92           | 729                             | 324   | 975    |
| Other                           |                     | Urban          | 4221  | 3137                              | 0             | 492                             | 92    | 429     | 71    | 1038                            | 477           | 203                             | 74    | 282    |

Source: 2002 Census of Population, Households and Dwellings in the Republic of Serbia, POPULATION – Activities and sex of the active population that performs occupation, Statistical Office of the Republic of Serbia, ISBN 86-84433-11-4; 2011 Census of Population, Households and Dwellings in the Republic of Serbia, POPULATION – Industry, Statistical Office of the Republic of Serbia, ISBN 978-86-6161-091-2, Application No. 10625
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| Administrative District | City-municipality | Settlement type | Total | In agricultural | In non-agricultural | Personal incomes | Mixed incomes | Without income | Total | In agricultural | In non-agricultural | Personal incomes | Mixed incomes | Without income |
|-------------------------|-------------------|-----------------|-------|-----------------|-------------------|------------------|---------------|---------------|-------|-----------------|-------------------|------------------|---------------|---------------|
| Nišavski A.D.           |                   | Urban           | 127920| 5962            | 46141             | 40159            | 28959          | 6699          | 128303| 1508           | 38040             | 48641            | 36251          | 3863          |
|                         |                   | Other           | 73790 | 189             | 32663             | 23264            | 13940          | 3734          | 78184 | 84             | 28635             | 27650            | 19258          | 2557          |
| The City of Niš         |                   | Urban           | 85269 | 1084            | 36679             | 26266            | 16902          | 4338          | 89903 | 170           | 31472             | 32008            | 23394          | 2859          |
|                         |                   | Other           | 62247 | 66             | 27884             | 19718            | 11507          | 3072          | 66971 | 31            | 25169             | 23416            | 16053          | 2302          |
| Medijana                |                   | Urban           | 54130 | 5773            | 13478             | 17895            | 15019          | 2965          | 50119 | 1424         | 9405              | 20991            | 16993          | 1306          |
|                         |                   | Other           | 23022 | 1018           | 8795              | 6548             | 5395           | 1266          | 22932 | 139          | 6303              | 8592             | 7341           | 557           |
| Palilula                |                   | Urban           | 1477  | 5              | 759               | 403              | 233            | 77            | 1510  | 1            | 575               | 512              | 380           | 42           |
|                         |                   | Other           | 1477  | 5              | 759               | 403              | 233            | 77            | 1510  | 1            | 575               | 512              | 380           | 42           |
| Crveni Krst             |                   | Urban           | 4776  | 327            | 1712              | 1234            | 1209           | 294           | 5985  | 37          | 1805              | 2158             | 1865          | 120          |
|                         |                   | Other           | 4776  | 327            | 1712              | 1234            | 1209           | 294           | 5985  | 37          | 1805              | 2158             | 1865          | 120          |
| Pantelej               |                   | Urban           | 1404  | 9              | 633               | 497              | 276            | 78            | 1480  | 3          | 434               | 574              | 438           | 31           |
| Niška Banja             |                   | Urban           | 1404  | 9              | 633               | 497              | 276            | 78            | 1480  | 3          | 434               | 574              | 438           | 31           |
|                         |                   | Other           | 1404  | 9              | 633               | 497              | 276            | 78            | 1480  | 3          | 434               | 574              | 438           | 31           |
| Aleksinac              |                   | Urban           | 18616 | 2176           | 4841              | 5731             | 4779           | 1089          | 17016 | 604         | 3457              | 6807             | 5675          | 473          |
|                         |                   | Other           | 18616 | 2176           | 4841              | 5731             | 4779           | 1089          | 17016 | 604         | 3457              | 6807             | 5675          | 473          |
| Gadžin Han             |                   | Urban           | 4359  | 376            | 749               | 2052            | 918            | 264           | 3637  | 167         | 488               | 2034             | 334           | 114          |
|                         |                   | Other           | 34913 | 9473           | 9242              | 1232            | 1209           | 294           | 5985  | 37          | 1805              | 2158             | 1865          | 120          |
| Sviljaj                 |                   | Urban           | 5367  | 236            | 1460              | 1738            | 1752           | 181           | 5261  | 51          | 1028              | 2136             | 1900          | 146          |
|                         |                   | Other           | 34913 | 9473           | 9242              | 1232            | 1209           | 294           | 5985  | 37          | 1805              | 2158             | 1865          | 120          |
| Merošina               |                   | Urban           | 4237  | 443            | 738               | 1311            | 1574           | 171           | 4046  | 147         | 476               | 1549              | 1788          | 86           |
|                         |                   | Other           | 3888  | 9              | 99                | 111              | 158            | 11            | 388   | 3          | 68                | 127              | 178           | 12           |
| Ražanj                 |                   | Urban           | 3544  | 522            | 415               | 1057            | 1352           | 198           | 2982  | 237         | 277               | 1116             | 1287          | 65           |
|                         |                   | Other           | 3544  | 522            | 415               | 1057            | 1352           | 198           | 2982  | 237         | 277               | 1116             | 1287          | 65           |
| Svirilj                |                   | Urban           | 6528  | 1125           | 1259              | 2004            | 1682           | 458           | 5458  | 132        | 842               | 2991              | 1373          | 120         |
|                         |                   | Other           | 6528  | 1125           | 1259              | 2004            | 1682           | 458           | 5458  | 132        | 842               | 2991              | 1373          | 120         |

Source: 2002 Census of Population, Households and Dwellings in the Republic of Serbia, POPULATION – Households and Families, Statistical Office of the Republic of Serbia, ISBN 86-8433-38-6; 2011 Census of Population, Households and Dwellings in the Republic of Serbia, POPULATION – Basic household characteristics, Statistical Office of the Republic of Serbia, ISBN 978-86-6161-082-0, Application No. 9485
3. CONCLUSION

Presented results imply that changes in the spatial and physical structures of the settlement did not take place parallel to demographic, economic and social transformations. Although attempts have been made in order to guide spatial development of the settlements, that process took place largely spontaneously, without clear commitments in the conception of overall development.

Despite the depopulation there was enlargement of the built-up area in all of the settlements, which indicates that planning failed to comply with the principles of sustainability in the use of space. Natural and ecological potentials of agricultural land, which was the basis of economic development along with the industrial corporations, has been marginalized as a non-profit, and environmental and sustainability dimension of development completely ignored due to the need of satisfying the existential questions of employment and preventing of demographic drain.

Analyzing the expansion of built-up areas as well as demographic and economic trends, the tendency of local government units to adapt to new market conditions by providing areas that are intended for the development of enterprises from the tertiary economy sector can be observed.

Expansion of built-up areas of other settlements, despite the generally negative demographic indicators, also indicates a tendency of restructuring from the primary agricultural production as traditional economic activity in them, to the other, currently more profitable branches of economy.

The dominance of non-agricultural activities unrelated to the character of a settlement indicates that the economic trends have become a dominant factor in the growth of the building areas, which leads to conclusion that the analysis of the economic trends should be more widely used as a basis in determining the extent of the expansion of construction area, as well as in the determination of the prevailing purposes of the newly planned areas.

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UTICAJ PROMENE PRIVREDNE STRUKTURE NA TERITORIJALNI I DEMOGRAFSKI RAST NASELJA U POST-SOCIjalističkom PERIODU, PRIMER NIŠAVSKOG UPRAVNOG OKRUGA

Rad se bavi analizom uticaja izmenjenih društveno-političkih i ekonomskih uslova u post-socijalističkom periodu na prostornu, demografsku i funkcionalnu transformaciju naselja na primeru Nišavskog upravnog okruga. Na osnovu popisnih podataka i podataka iz aktualne planske dokumentacije, sprovedena je komparativna analiza u cilju određivanja međuzavisnosti između promena u načinu korišćenja zemljišta i demografskih kretanja prema tipu naselja. S obzirom da se razvoj odvija pod uticajem mnoštva faktora analizirane su i promene u privrednoj strukturi kako bi se ispitao nivo do koga su primenjeni savremeni principi održivosti i kontrole rasplinjavanja naselja. U teorijskom delu rada dat je prikaz nastanka i razvoja ideje ograničenja rasplinjavanja naselja, uz pregled odredbi bitnih međunarodnih konvencija.

Ključne reči: Prostorno i urbanističko planiranje; upotreba prostora, rasplinjavanje naselja