CHAPTER 8

Urban And Spatial Aspects Of Depopulation In Serbia

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1 Introduction: Shrinking Cities as a Key Spatial Element Of Depopulation

Depopulation at national level has become one of the main development challenges for many European countries. It has profound interrelations with the decline at all territorial levels: depopulating regions, municipalities, cities and villages. The depopulation of villages and rural regions is probably the best known as it has been present since the post-war decades. However, the phenomenon of depopulating countries in peacetime is more correlated to the recent urban depopulation. Most post-socialist European countries have experienced demographical shrinking with the fall of socialism, which caused sudden and uncontrolled deindustrialisation and therefore the rapid decline of the urban population. Similarly, Portugal and Greece began to demographically shrink during the economic crisis of 2008, when their service-based urban economies fell into a crisis. Bulgaria and Romania are especially indicative in this sense, as they are the poorest and most shrinking EU countries, as well as the only ones with more than 90% shrinking cities (Restrepo Cadavid et al., 2017). These arguments clearly show that the demographic state of urban settlements, i.e., urban growth vs. urban decline, has become one of the key indicators of (de)population trends at national level.

Serbia also shows the aforementioned demographic-territorial patterns. Rural depopulation was identified in all population censuses since the 1960s, and all national spatial plans in the second half of the century have underlined this as a great challenge, but planned measures to deal with the rural exodus have not had a significant impact. The post-socialist period has only propelled the problem with depopulation to new levels. Two national post-socialist population censuses, done in 2002 and 2011, showed the first signs of simultaneous demographic crisis at both national and urban levels. The last census in 2011 was the first after the overall majority of urban settlements (74%) demographically shrunk, which was in a sharp contrast to the growth of four major cities – Belgrade, Novi Sad, Niš, and Kraguvac. This can be explained by the fact that Serbia is a country with a highly centralised government in major cities, where the intermediate level, the administrative districts, does not exist as an independent tier of entities. Such a situation leaves the district seats, Serbian middle-sized cities, without real economic power or demographic and social potential, so they cannot be an adequate interlink between major cities and rural hinterlands. As a result, the depopulation of middle-sized cities speeds up the depopulation of their districts, subordinated smaller-rural municipalities and most of the villages in their gravitation zones.

An additional problem is that Serbia does not have natural borders with highly developed European countries or worldwide tourist attractions, such as the Adriatic seaside for Croatia or Prague for the Czech Republic. Hence, external poles for repopulation and redevelopment do not exist and the internal territorial balance would seem to be the critical one for the demographic development of the country. Taking into account that by these characteristics Serbia is similar to the aforementioned Bulgaria and Romania, the future demographic prospects of both country and urban settlements is uncertain. On the other hand, this also implies that the improvement of the socio-economic situation of medium-sized Serbian cities can have a great positive impact on their regions, districts and rural development.

This importance of cities for general depopulation trends is not related just to Serbia or Europe – it is a consequence of the rising share of the urban population worldwide. The urban population has been globally dominant for about ten years. The United Nations (UN) world urbanisation report underlines that 55% of the world's population resided in cities in 2018, and this share is expected to rise to 70% in 2050. Larger cities will grow the fastest (UN, 2019). All these data indirectly demonstrate that issues connected with the development of cities, especially the multimillion ones, will have increasing importance in the development of the planet. In addition, urban development is crucial for spatial development in general, for regional development and rural development, where the position of small and medium-sized cities is especially emphasised as a link between larger cities and the rural hinterland. The development and vibrancy of these cities and their gravitating rural surroundings are closely dependent (UN, 2019).

According to the same report (UN, 2019), Europe as a continent is among the most urbanised parts of the Earth. Urbanisation in Europe began in the late 19th century and many cities reached their growth peak decades ago. Hence, the challenges of urban development are different here than at the level of most of the world, where urban growth is still present and accompanied by different challenges, such as unplanned construction, excessive social polarisation in cities or lagging behind in urban infrastructure development.

Today, Europe is the continent with the most evident urban *shrinkage*[162] phenomenon. Urban shrinkage is considered to be a series of mostly unfavourable and interconnected development trends at the level of one city. Depopulation, i.e. the loss of urban population, is the most important feature of this phenomenon (Pallagst, 2008). Population decline has even been crucial to establishing an appropriate research framework in recent decades – the *concept of shrinking cities*. The reason for shaping the concept is that, for the first time in urbanisation, we are witnessing a mass occurrence of the peacetime decline of cities that are losing population relatively slowly and evenly due to the decline of the local economy, and not as a result of wars, extreme political crises or natural disasters such as earthquakes, floods and droughts. According to recent data, about 20% of the world's major cities are losing population (Wolff & Wiechmann, 2018). In Europe, this is even more pronounced as, at the beginning of the third mil-

[162] This phenomenon is common in Japan, the United States, and, more recently, in China.

lennium, almost half of the major European cities[163] were losing their population (Turok & Mykhnenko, 2007). Most of them were in its eastern half, that is, in the former socialist countries, where it has become the predominant urbanisation pattern. Thus, according to data from several years ago, about 75% of Eastern European cities lost population, and in the case of Romania and Bulgaria, that percentage was even above 90% (Restrepo Cadavid et al., 2017).

Although the decline of a city is easily observed through its depopulation, the phenomenon of urban shrinkage itself is much more complex (Haase et al., 2014). Problems in the restructuring of the urban economy are most often quoted as the cause of urban shrinkage, while other important factors are the limitations imposed by administrative and territorial division, i.e. the impact of borders and zones of influence, changing demographic, social and environmental patterns at the local, regional or national level and accessibility and networking issues (Martinez-Fernandez et al., 2012). Since all socio-economic phenomena are reflected in the urban space, these cities are visually and functionally shrinking, their urban space is more neglected, and there are empty or half-empty buildings, and unused and unmaintained urban land and infrastructure. Such an environment often encourages further depopulation. Due to this interdependence of factors, it is some- times very difficult to distinguish what is the cause and what is the consequence of urban shrinkage.[164]

The first key question faced by decision-makers and experts in a shrinking city is what the goal of the measures is – a return to the former (demographic) growth, or stabilisation of the situation in the city through adaptation to urban shrinkage (Hospers, 2014)? Although the former is usually sought at the local level, the latter has proved more certain, especially because urban shrinkage does not have to be negative *per se*, if, for example, it is accompanied by an increase in the quality of life and the environment. There are also other, somewhat arguable strategies: the first is to consciously bypass the shrinkage topics in city administration,[165] and the second is the use of the main local features of shrinkage in creative ways as potential for new development (Hospers, 2014). All the given approaches have their examples in local practice through different development policies with positive and negative outcomes. Practice shows that there is no global solution to urban shrinkage, but it should be sought in a combination of international guidelines and recommendations and local and regional characteristics (Haase et al., 2014).

All the described efforts to adequately respond to urban shrinkage as a mass and complex phenomenon are important for the Republic of Serbia, where for the first time in the last census in 2011 it was noted that most of the 167 official urban settlements[166] had shrunk during the peacetime period, i.e. after the Second World War. Also, for the first time, it was noted that most of the medium-sized cities, seats of administrative districts in Serbia and those that are the key link between larger cities and rural areas, had shrunk. Despite their similar size, medium-sized cities are characterised by the different features of urban shrinkage and depopulation, as well as great diversity in a number of other features. The main goal of this chapter is to create medium-sized city clusters[167] based on the given similarities and differences of their urban shrinkage, for which sets of development policy measures would be established. The given measures would refer to several spatial levels:

(1) within the (urban) settlement, (2) the city in relation to its immediate surroundings and (3) the city in relation to its broader surroundings, i.e. the surrounding cities and to larger cities in Serbia. In this way, a broader contribution is made through an innovative approach in urban policy planning in relation to depopulation, because it improves the previous urban and spatial planning in Serbia, where so far not much attention has been paid to urban shrinkage and its relationship to depopulation at a broader level (municipal, district, regional and national).

2 Methodology

The analysis of the shrinkage of medium-sized cities was conducted on the basis of several criteria derived from the described factors of urban shrinkage. They have been selected so that local features of urban shrinkage can be seen through them. The criteria are:

The basic research unit is a medium-sized city in terms of an urban area as a uniquely built-up area.[168] For the analysis of urban shrinkage, it is important to include the entirety of developed conurbations (Domhardt & Troeger-Weiß, 2009). This solves the issue of the so-called "flight to the suburbs", where the demographic depopulation of the central urban settlement occurs at the expense of its growing suburbs, and which as a whole zone usually does not shrink.[169]

[163] Larger cities are considered to be cities with over 100,000 inhabitants.

[164] However, according to the majority of renowned sources, a shrinking city is a densely populated urban area, i.e. a uniquely built-up area consisting of the city and its suburbs (if any), which experiences population loss for at least two years due to declining economic activity, and which had at least 10 thousand inhabitants prior to shrinkage. In practice, a time period between two 10-year censuses is usually taken.

[165] This seems to be the approach which currently prevails among Serbian cities.

[166] In line with the division of settlements into urban and rural by the Statistical Office of the Republic of Serbia.

[167] Medium-sized cities which had a demographic growth in 2011 would also be included, because according to the latest official estimates, some of them have become shrinking cities.

[168] This refers to the city as a central settlement and its spatially fused suburbs, if any, which are officially independent settlements, regardless of whether they are listed as rural or, less frequently, as urban.

[169] In certain economic criteria (salaries, investments, employees by occupations), data at the level of the local self-government unit will be used, because the given data are officially collected at that level, not for settlements.

No.	ASPECT	No.	CRITERION
1.	Demographic	C0	Population trends (current growth or decline)
2.		C1	Population of the city (i.e. the demographic size of the city)
3.	Economic	C2	Financial indicators (budget, investments, salaries) per capita
4.		C3	The character of the city economy according to the share of employees by economic activities, especially in industry
5.		C4	Presence of high-order city functions (higher education, high culture, scientific research institutes, etc.)
6.		C5	Position of the city in relation to the nearest higher order road, i.e. highway
7.	Administrative	C6	Position of the city in relation to the state border
8.		C7	Position of the city in relation to the country's larger cities
9.	Social	C8	Urban housing characteristics (increase in new construction and number of empty dwellings trend)

Table 1. Criteria for the analysis of urban shrinkage in Serbia's cities[170]

In Serbia, there are 24 medium-sized urban settlements which are the seats of local self-government units[171] with the status of a city (figure 1). They represent 14% of urban settlements in the country. Most of these settlements have between 30,000 and 100,000 inhabitants.[172]

Medium-sized cities are the most important units of local self-government, and the local self-government unit has been the only essential level of regional decentralisation of the state for decades (Vasiljević, 2007).[173] For the first time since the last census in 2011, most of these cities have been shrinking and this represents a new phenomenon in depopulation in Serbia, which is no longer associated exclusively with agricultural settlements, but also with settlements which are or were previously industrial and service centres, i.e. urban-type settlements.

Medium-sized cities are particularly significant because they represent a key link between rural areas with small towns and larger cities of international and/or regional significance. Furthermore, the vast majority of these cities are also the seats of their administrative districts[174] as a potentially important regional level for the (desired) decentralisation of the state, as one of the important measures for better socio-economic and, therefore, demographic balance within a broader area. Therefore, it can be seen that these cities are the most important, if not the only means for spatial development which can contribute to balancing the four big cities registering growth – Belgrade, Novi Sad, Niš and Kragujevac – with the rest of Serbia.

The time frame of the analysis is particularly related to changes within the last inter-census period between 2002 and 2011. Where recent data existed, they were included in the analysis.

[170] Ecological criteria were included in preliminary research for available data. For example, a correlation between population density in an urban area and population growth or loss of the relevant city was examined. However, such correlations were not detected. This observation is otherwise in line with the international sources, which shows that these ecological conditionalities can influence urban shrinkage both positively and negatively. For instance, the decline of small and medium-sized cities in Finland in the late 20th century is directly linked to heightened ecological awareness and the related strengthening of environmental legislation, which has consequently hindered the development of the local timber industry as the backbone of the economy of these cities.

[171] In Serbia, the division of local self-government units into cities and municipalities has been legally in place since 2007. In terms of the current Law on Territorial Organization of the Republic of Serbia, cities are actually former larger local self-government units (i.e. former larger municipalities), mostly those where the seats of administrative districts are located. Such 'cities' include a central urban settlement (in the original sense of the word city, used in this research), but also a large number of rural settlements and vast areas under agricultural and forest land, which do not have urban characteristics. This ambiguity has led to great dilemmas in the use of terms in public life, where they are often confused.

[172] The 100,000-population threshold is taken in most global and European surveys as the line dividing a large and medium-sized city. Similarly, most countries in the eastern half of Europe have a threshold between small and medium-sized cities ranging from 25,000 to 50,000 inhabitants.

[173] The Autonomous Province of Vojvodina (as well as de jure Kosovo and Metohija / references to Kosovo shall be understood to be in the context of Security Council resolution 1244 (1999)) should be emphasised at this point, as the only part of the state which has, in essence obtained autonomy at regional level, with its own budget, financial transfers stipulated by the constitution, basic jurisdictions and the position of a legal entity. All mentioned elements of autonomy are nevertheless implemented through the provincial government, located exclusively in Novi Sad as a provincial capital. Administrative districts in Serbia are more like elements of delegation of national or regional/Vojvodina government, which indirectly implies a gap between the fast and significant growth of Belgrade and Novi Sad as two government seats and the decline of the rest of Serbia.

[174] The three cities that have the official status of a city but which are not district seats are Novi Pazar, Vršac and Loznica. Their significance is reflected in the fact that, within their districts, they are in the spatial sense opposite to the district seat (i.e. Kraljevo, Pančevo and Šabac), so they have their areas of influence which extend to the surrounding smaller municipalities. This is an important element to be included in this research.

3 Key Indicators of Urban Shrinkage of Serbian Cities

There are officially 167 urban settlements in the Republic of Serbia, which can be grouped into three sets according to their character. The majority comprises 125 settlements or 74.9% of all urban settlements in Serbia which are at the same time the seats of territorial administration units (municipalities and districts). The second set (20 or 12.0%) are urban settlements which are the suburbs of larger settlements, and the third set (22 or 13.2%) are other urban settlements, distinct by nature of their economies, usually mining and tourist settlements. Such cities are called monostructural or mono-cities due to their economic uniformity. The process of urban shrinkage points to several key indicators:

In the 2011 census, 74.3% of urban settlements were depopulated compared to the previous 2002 census. This is a significant deterioration compared to the previous inter-census period (1991-2002), when, for the first time since the Second World War, more than 10% of cities were declining. An average city in Serbia had a 4.1% decline in the 2002-2011 period. Borča had the highest growth (+ 31.1%), while Divčibare registered the deepest decline (-40.0%). As many as 35 (21.0%) urban settlements had undergone a serious decline of over 10%.

The highest number of growing urban settlements were among the suburbs with an urban settlement status – 65.0% of these recorded growth. The third set of urban settlements (mainly mining and tourist towns) remained on the opposing end where as many as 90.9% had shrunk. Data for urban settlements that are also administrative centres were similar to the national average. In this most numerous set of urban settlements, Novi Pazar had the largest growth (+21.8%), while Majdanpek had the deepest decline (-23.6%).

According to the findings, it is easy to notice that the smaller the city, the faster it shrinks. All four settlements in Serbia with over 100,000 inhabitants recorded growth in the 2002-2011 period; out of 24 urban settlements with 30,000-100,000 inhabitants, 62.5% shrank; out of 51 urban settlements with 10,000-30,000 inhabitants 77.7% shrank, out of 41 urban settlements with 5,000-10,000 inhabitants as many as 85.4% shrank, while a slightly smaller share (72.9%) shrank in the last group of 48 urban settlements with less than 5,000 inhabitants, due to a larger presence of suburbs.[175]

At the level of NUTS2[176] regions, only the Belgrade Region recorded a positive urban population growth (+5.5%), while the Region of Southern and Eastern Serbia recorded the largest decline (-2.3%). However, the differences between cities within one region are drastically larger, so there was a big decline (>10%) in 11 (21.6%) urban settlements in Vojvodina, 10 (19.6%) in Šumadija and Western Serbia, and as many as 14 (29.8%) in Southern and Eastern Serbia. Vojvodina is the biggest surprise here, though, as the most developed part of the country after Belgrade, which indirectly speaks of the excessive centralisation of the province in Novi Sad.

4 Analysis

The analysis of the depopulation of medium-sized cities was conducted on the example of 24 cities. The selected cities are a relatively homogeneous group of settlements with several shared features: most have between 30,000 and 100,000 inhabitants, 21 cities are also the seats of administrative districts in Serbia, all cities have their areas of influence that extend beyond their own local self-government unit, that is, to the surrounding smaller municipalities, and almost all cities have certain, albeit few higher-order public functions (one to two higher education institutions, higher-order cultural institutions, scientific research institutes, etc.). The aim of this analysis is to perceive the differences among them and to put them in relation to their growth or decline in order to create clusters of cities.

4.1 Population trends

The rate of the growth or shrinkage of cities is observed for the 2002-2011 period for the entire urban area, with a subsequent assessment for 2020.

[175] According to the 2014 Book No. 20. 'Comparative Overview of the Number of Population in 1948, 1953, 1961, 1971, 1981, 1991, 2002 and 2011: Data by Settlements' by the Statistical Office of the Republic of Serbia. Compare also: Antonić et al., 2020.

[174] Division made on the basis of level 2 of the Nomenclature of Statistical Territorial Units (internationally NUTS). De facto, there are four NUTS2 regions in Serbia: Belgrade region (16 urban settlements), Vojvodina (51), Šumadija and Western Serbia (51) and Southern and Eastern Serbia (47).

No.	City	Included suburban settlements (U – urban settlement)[177]	Number of inhabitants		Trend 2011–2002
			2002	2002	
1	Bor	Brestovac	42,337	36,850	-13.0%
2	Valjevo	Beloševac, Gornja Grabovica, Degurić, Petnica, Popučke, Rađevo Selo, Sedlari	69,096	67,383	-2.5%
3	Vranje	Ribince, Suvi Dol	56,099	56,255	+ 0.3%
4	Vršac	-	36,623	36,040	-1.6%
5	Zaječar	-	39,491	38,165	-3.4%
6	Zrenjanin	-	79,773	76,511	-4.1%
7	Jagodina	Bresje, Vinorača, Voljavče, Majur, Trnava	43,871	46,152	+ 5.2%
8	Kikinda	-	41,861	38,065	-9.1%
9	Kraljevo	Adrani, Grdica, Jarčujak, Konarevo, Kovanluk, Kovači, Ratina, Ribnica (U), Čibukovac	74,585	81,463	+ 9.2%
10	Kruševac	Begovo Brdo, Dedina, Kapidžija, Lazarica, Mudrakovac, Pakašnica, Parunovac, Čitluk	74,282	77,106	+ 3.8%
11	Leskovac	Bobište, Bratomilce, Gornje Stopanje, Donje Sinkovce	71,915	69,790	-3.0%
12	Loznica	Banja Koviljača (U), Baščeluci, Klupci, Krajišnici, Lozničko Polje, Ploča	44,395	41,822	-5.8%
13	Novi Pazar	Banja, Mur, Osoje, Paralovo, Pobrđe, Postenje	65,469	81,100	+ 23.9%
14	Pančevo	Starčevo (U)	84,666	83,818	-1.0%
15	Pirot	Berilovac, Gnjilan, Novi Zavoj	46,547	44,516	-4.4%
16	Požarevac	-	41,736	44,183	+ 5.9%
17	Prokuplje	Donja Stražava, Novo Selo	28,757	28,522	-0.8%
18	Smederevo	Vučak, Landol, Petrijevo, Radinac, Ralja, Udovice	75,169	77,401	+ 3.0%
19	Sombor	-	51,471	47,623	-7.5%
20	Sremska Mitrovica	Laćarak, Mačvanska Mitrovica (U)	53,873	52,262	-3.0%
21	Subotica	Palić (U)	107,726	105,681	-1.9%
22	Užice	Duboko, Sevojno (U)	63,375	60,595	-4.4%
23	Čačak	Beljina, Konjevići, Loznica, Preljina, Trbušani, Trnava	81,839	83,956	+ 2.6%
24	Šabac	Jevremovac, Jelenča, Majur, Mišar, Pocerski Pričinović	75,339	74,740	-0.8%
Total			**1,450,295**	**1,449,999**	**-0.0%**

Table 2. Population trends by city for the 2002/2011 period.

Source: SORS, 2014b

According to table 2, medium-sized cities in Serbia are shrinking, but only by a total of 300 people. Still, out of 24 cities, 2/3 shrank, that is, 16 cities. If this were to be divided into growing/declining categories,[178] then the following distribution is obtained (Fig.1):

1) Large growth – 1 city: Novi Pazar.

2) Moderate growth – 3 cities: Kraljevo, Jagodina and Požarevac.

3) Small growth – 4 cities: Kruševac, Smederevo, Čačak and Vranje.

4) Small decline – as many as 12 cities: Šabac, Prokuplje, Pančevo, Vršac, Subotica, Valjevo, Leskovac, Sremska Mitrovica, Zaječar, Zrenjanin, Pirot and Užice.

5) Moderate decline – 3 cities: Loznica, Sombor and Kikinda.

6) Large decline – 1 city: Bor.

Novi Pazar had the largest growth, while Bor had the largest decline. Both cities are exceptions; Novi Pazar differs in its ethnic composition and still has noticeable natural population growth, whereas Bor, as a mining centre, is the only real mono-city in the observed group, although Užice has some inherited elements of this development from the socialist era.

[177] Suburban settlements within the scope of the urban area are, as a rule, included in the boundaries of the General Urban Plan as one of the main local strategic documents. A smaller number of these settlements are also urban, such as Palić or Sevojno, and this is specifically indicated.

[178] The ideal demographic growth between 5% and 10% on a ten-year level is taken in scientific circles as a basis for obtaining categories, as it enables the growth of the number of employees best covered by the growth of the economy. Growth of over 10% is already seen as pressure on the local economy in terms of employment.

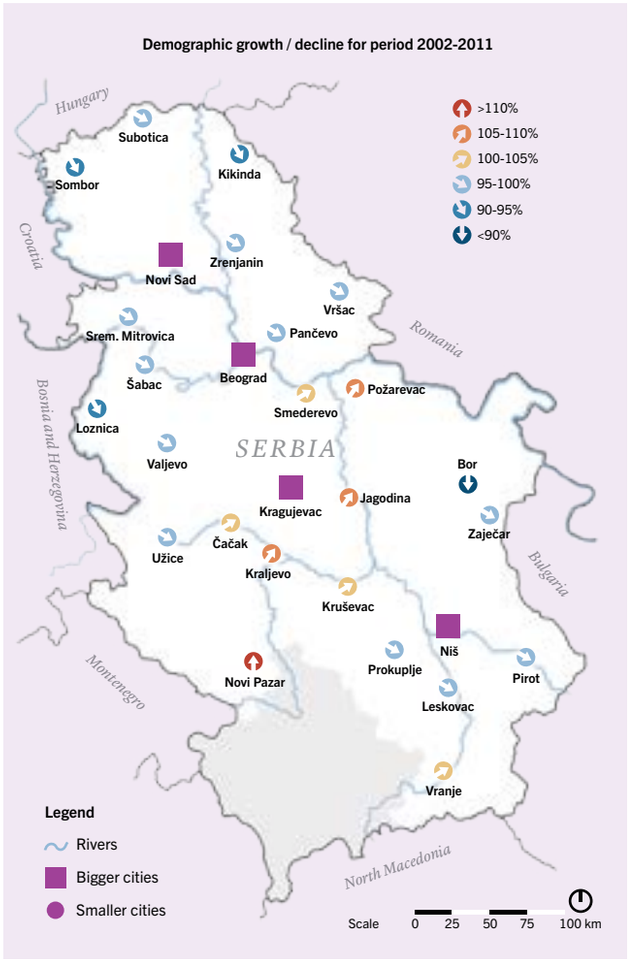

Figure 1. Spatial distribution of medium-sized cities in Serbia according to the population growth or decline

As the last census was conducted in 2011, an estimate of the number of inhabitants for the analysed cities for 2020 was made, based on the published official estimates for 2020 at the level of the corresponding local self-government units. The given figures are compared with the share of the population of urban areas in the 2002 and 2011 censuses in relation to the total population of the local self-government unit (SGU).[179]

As is evident from Table 3, this estimate suggests that the population is declining in more than 90% of the cities. However, it also shows smaller extremes, because, although only two cities (8.3%) are growing, the decline is not as sharp in places where it was highest in 2011, such as Bor or Sombor. When the estimated values of the population of cities for 2020 are compared with the 2011 census, as many as 13 cities (54%) have worse demographic indicators and these are mostly places which experienced an increase or only a slight decline in population during the 2002-2011 period. Cities with significant declines have similar or somewhat better outcomes, but are all, with the exception of Valjevo, still undergoing demographic decline.

The main conclusion is that the estimates show the uniformity of medium-sized cities in the direction of a somewhat slighter, but increasingly pervasive population decline. This reduction in variability in demographic trends among cities across Serbia is also evidence of increasingly significant centralisation. It seems that local urban development is subject to strong influence from higher, national and provincial levels, and therefore has little alternative but to make a step in the new development direction which holds out the possibility of economic and demographic turnaround.[180]

No.	City	No. inhabitants SGU 2020 (estimate)	Share of cities in local self-government unit			City no. inhabit. (estimate)	Trend 2020/2011
			2002	2011	2020 (estimate)		
1	Bor	44,639	75.85%	75.80%	75.75%	33,814	-8.24%
2	Valjevo	85,316	69.97%	74.61%	79.26%	67,618	+ 0.35%
3	Vranje	79,782	64.27%	67.35%	70.43%	56,194	-0.11%
4	Vršac	48,913	67.36%	69.27%	71.19%	34,819	-3.39%
5	Zaječar	53,509	59.86%	64.18%	68.51%	36,657	-3.95%
6	Zrenjanin	115,797	58.32%	62.02%	65.72%	76,102	-0.53%
7	Jagodina	68,926	61.88%	64.23%	66.58%	45,892	-0.56%
8	Kikinda	54,131	62.48%	64.03%	65.57%	35,496	-6.75%
9	Kraljevo	117,168	61.28%	64.92%	68.55%	80,320	-1.40%
10	Kruševac	120,154	56.54%	59.89%	63.23%	75,973	-1.47%
11	Leskovac	134,285	46.03%	48.40%	50.77%	68,173	-2.32%
12	Loznica	74,703	51.38%	52.72%	54.07%	40,389	-3.43%
13	Novi Pazar	107,071	76.13%	80.77%	85.41%	91,447	+ 12.76%
14	Pančevo	119,509	66.58%	67.92%	69.25%	82,761	-1.26%
15	Pirot	53,824	72.97%	76.85%	80.73%	43,450	-2.39%
16	Požarevac	71,746	55.72%	58.65%	61.58%	44,180	-0.01%
17	Prokuplje	40,748	59.29%	64.21%	69.13%	28,169	-1.24%
18	Smederevo	102,288	68.45%	71.53%	74.60%	76,311	-1.41%
19	Sombor	78,472	52.92%	55.44%	57.96%	45,480	-4.50%
20	S. Mitrovica	75,241	62.71%	65.38%	68.04%	51,193	-2.05%
21	Subotica	136,475	72.59%	74.66%	76.72%	104,709	-0.92%
22	Užice	72,940	76.34%	77.65%	78.96%	57,591	-4.96%
23	Čačak	109,568	69.90%	72.79%	75.68%	82,920	-1.23%
24	Šabac	110,148	61.30%	64.50%	67.69%	74,555	-0.25%

Table 3. Population estimate for cities in 2020

Source: SORS, 2020

[179] It is interesting to note that in the 2002-2011 period, the given share of the population of urban areas grew in all cities except Bor, regardless of whether the cities themselves lost population or not.

[180] As the analysis for 2020 is a situation assessment, demographic data for 2011 will be used hereinafter in the research.

4.2 Number of inhabitants in a city in relation to urban depopulation

The analysis according to this criterion builds on that above, because it has already been determined that with a decrease in size, cities become still further prone to shrinkage. This has also been tested for selected medium-sized cities. As before, a distribution was made between six categories corresponding to the size of the cities.

The table shows a so-called 'diagonal layout', which means that even in this relatively homogeneous group of cities, their size affects the change in population. The category of the largest cities (over 80,000 inhabitants) is the only one where most of them are growing, while in the category of the smallest ones (below 40,000 inhabitants), all cities are in decline. Similarly, Novi Pazar, which is growing the fastest, is in the first category of cities, while Bor, with the largest decline, is in the last. The biggest exceptions to the above rule can be singled out. In a negative sense, it is Subotica, because it is declining, and it is the largest among the researched cities. However, unlike most cities, Subotica has a distinct border-city character, so despite its size, it has a relatively small gravitation zone. On the other hand, there are the positive examples of Jagodina and Požarevac, cities in the fifth category, which have growth of over 5%. Both cities are in the central part of the country and around several cities which are larger or comparable to them (Smederevo, Ćuprija and Paraćin), so a good networking influence can be assumed.

No.	City size	Large growth (>10%)	Moderate growth (5–10%)	Small growth (0–5%)	Small decline (0–5%)	Moderate decline (5–10%)	Large decline (>10%)
1	>80 thousand inhabitants	Novi Pazar	Kraljevo	Čačak	Subotica Pančevo	-	-
2	70–80 thousand inhabitants	-	-	Smederevo Kruševac	Zrenjanin Šabac	-	-
3	60–70 thousand inhabitants	-	-	-	Leskovac Valjevo Užice	-	-
4	50–60 thousand inhabitants	-	-	Vranje	Sremska Mitrovica	-	-
5	40–50 thousand inhabitants	-	Jagodina Požarevac	-	Pirot	Sombor Loznica	-
6	<40 thousand inhabitants	-	-	-	Zaječar Vršac Prokuplje	Kikinda	Bor

Table 4. Population in the city and urban depopulation for the 2002/2011 period

4.3 Financial and fiscal indicators and relation to urban depopulation

The 'financial element' of urban shrinkage is an under-researched aspect within the topic of urban decline. Two questions are important here: (1) how to measure urban decline in this regard and (2) how to shape financial measures based on such measurments? In the first case, there is no consensus among experts and a number of indicators have been proposed: local revenue trends, the city's gross domestic product trends, the number of employees, i.e. unemployed relative to the total population, level of investment, difference between revenues and expenses or the degree of dependence of the local budget on external financial sources, such as regional or state administration (Wolff, 2010; Stryjakiewicz & Jaroszewska, 2016).

In the case of financial measures for shrinking cities, it should be said immediately that they are rarely applied separately, but are combined with spatial measures in the broader development policy of a city. In cities with an extreme shrinkage in the United States, tax incentives and pressures are applied in order to move the population from parts of the city with larger shrinkage to other areas. In Western Europe, this approach has been changed in line with the less liberal model of urban development. For example, in cities with large and long-lasting shrinkage in the former East Germany,[181] financial support and investments are systematically directed to city quarters where a higher concentration of users (tenants, employees, etc.) is still maintained. The goal is to transform the renovated neighbourhoods into 'magnets' for further reurbanisation. This approach is known as an 'urban archipelago' (Cepl, 2006) or 'patchwork urbanism' (Brent, 2012).

The analysis in this part is made at the local self-government unit level, because only such data are officially available. The following available indicators were selected for analysis: average salary, budget revenues and investments.[182] In a financial sense, this looks at present (salaries), recent past (revenues) and the near future (investments).

[181] Many cities of the former East Germany began to shrink as early as at the end of World War II, but this process was markedly accelerated by the fall of socialism and the uncertainty of the post-socialist transition.

[182] The last two indicators were adjusted per capita for comparison. Data such as the share of employed and unemployed have proven to be very problematic for Serbia due to the still open issues of restructuring former state-owned enterprises, as well as the large share of informally unemployed.

Figure 2. Financial indicators by cities for 2019

Based on a comparative presentation of three financial indicators[183] six categories of cities were determined for each indicator and the findings were then compared with the cities' demographic trends (Fig. 2). Medium-sized cities lag significantly behind in terms of salaries, local revenues and investments in relation to the national average, and even more in relation to the two largest cities in Serbia, Belgrade and Novi Sad. However, there is no clear link between depopulation and financial indicators for most cities. For example, Novi Pazar and Bor demonstrate exactly the opposite. Demographically endangered Bor is above the national average in all three indicators, but it has the largest demographic decline, while in Novi Pazar there is a similar gap, but between good demographic and poor financial indicators.

Medium-sized cities have lower local income in relation to the average salary, which is not the case with Belgrade and Novi Sad, but also with several tourist municipalities in Serbia.[184] This indirectly implies that income earned in medium-sized cities 'spills over' in the form of consumption in larger cities and tourist places, which confirms the importance of the tertiary and quaternary economy for the local economy.[185]

In spatial terms, the situation deteriorates from the north- east to the southwest of Serbia according to the first two indicators, so, as a rule, cities in the north and east of the country usually have a better financial than demographic situation, while the opposite is true for cities in the south and west. The only significant anomaly is visible again near the city of Bor. It can also be noticed that the Danube region in the northwest-southeast direction, approximately represents the 'line' between the cities which are performing better and worse according to the selected financial indicators.

There are numerous spatial inconsistencies in investment, because cities which are more related to the energy sector (Bor, Pančevo and Požarevac) are considerably above the national average, especially in relation to the nearby cities.

4.4 The character of urban economy in relation to urban depopulation

An important determinant of shrinking cities is the decline of industry. Manufacturing industry has been a key economic activity for the establishment of a modern city since the late 18th century and the accelerated urbanisation that emerged as a direct consequence of mass industrialisation (Eisinger, 2006). Thus, due to problems with the restructuring of local industry in the post-industrial era, this type of a shrinking city, hit by industrial decline, has been considered common for several decades (Rieniets, 2009; Bontje & Musterd, 2012). The problem of declining industry especially affects small and medium-sized cities, where the tertiary sector of the economy, that is, trade and services, has been traditionally less important than industry (Restrepo Cadavid et al., 2017).

Two ways to overcome the problem of the urban economy of former industrial cities are noted. The first is simple reindustrialisation, which is usually a 'transitional solution', because along with the post-industrial era, the profile of the urban population is changing, as it becomes more educated and more specialised (Ralević et al., 2014). The long-term solution is the transition to tertiary and quaternary sectors of the economy, which has as a precondition the strengthening of higher-order urban functions in given cities.[186] This is usually done through strengthening decentralised and locally oriented education (Nelle, 2016). One such model is the creation of a network of small university-student cities, which indirectly leads to the rise of the research and development sector. This model of development is not only important

[183] Annex – Table 5.

[184] For example, the municipality of Čajetina (including Zlatibor) in 2019, had income per capita that was as much as 3 times higher than the national average, and this tendency can be seen to a lesser extent in Vrnjačka Banja.

[185] Which includes trade, services, tourism, banking, highly professional services, etc.

[186] These are entities in the field of higher education, research, science, creative industries, higher public administration, etc. These are often public institutions, but many can also be in private property/private sector.

in economic terms, but has been shown to have a favourable impact on urban social and environmental aspects (Nuzirab & Dewancker, 2014). Under Serbian conditions, this is visible in the cases of Novi Pazar and Kosovska Mitrovica, where relatively recently established universities have preserved the vibrancy of the cities.

The main indicator for this criterion is the growth or decline of industry at the level of the urban area during the inter-census 2002-2011 period and the degree of industrialisation according to the national average for 2011. This was examined based on the number of active inhabitants in the manufacturing sector for the level of local self-government units where cities were surveyed.

Comparative analysis[187] shows that, from 2002 to 2011, the number of employees in the (manufacturing) industry in all cities decreased significantly, especially if the working-age population (18-65 years) is

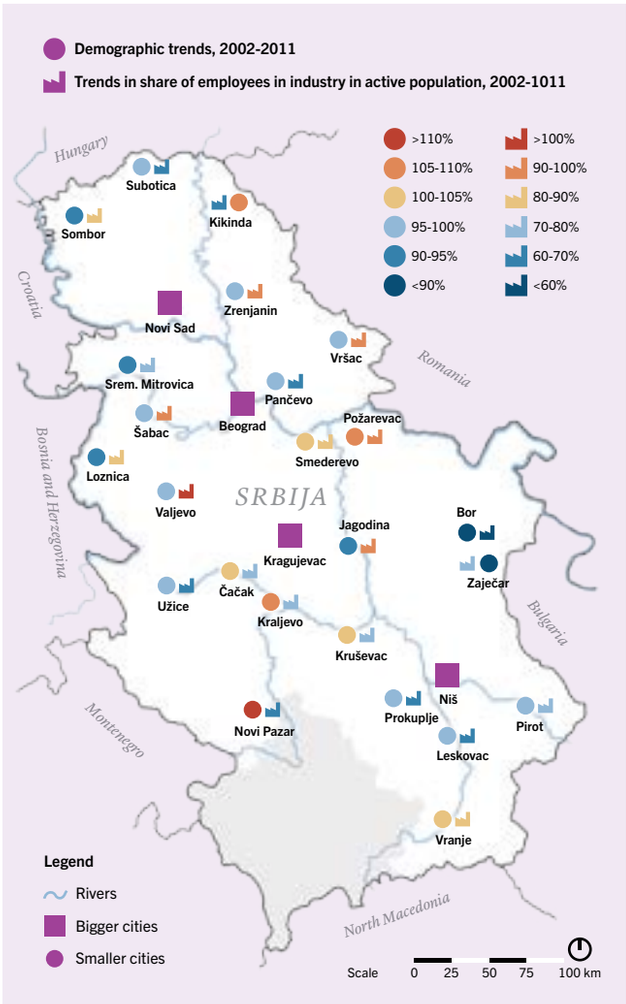

Figure 3. Growth or decline of industrial activities according to the number of employees during the 2002-2011 period and in relation to demographic trends

Source: B. Antonić, 2021

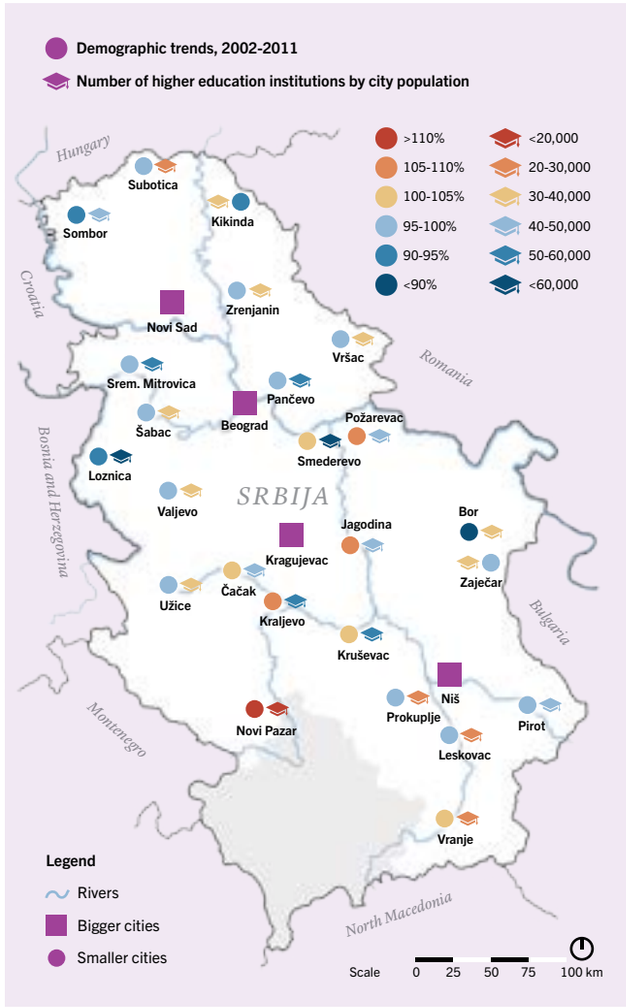

Figure 4. Concentration of higher education institutions in the researched cities according to their demographic trends

observed. As for the number of employees, the decline was smaller here, and there was even a slight increase in Valjevo. Zaječar is on the other end, where that share was halved. It is interesting to note that the share of employees in the manufacturing industry in the surveyed cities increased at the national level, from 2002 to 2011. This emphasises that medium-sized cities remain the 'bastions' of manufacturing industry in Serbia, regardless of its declining importance.

When this is presented spatially and linked to demographic trends (Fig. 3) it can be concluded that cities in the northern half of Serbia perform better than those in the southern half, with exceptions in both cases. Cities where industry is based on raw materials from the immediate vicinity, and especially those with a strong food industry, had better results. By contrast, cities with heavy and machine industries fared worse. For example, Pančevo and Sremska Mitrovica, with a relatively small share of light industry for Vojvodina, proved to be the worst at the provincial level. However, the worst results were in Bor and Zaječar in Eastern Serbia, which have a significant decline in population.

[187] Annex - Table 6.

4.5 Higher-order urban functions and relation to urban depopulation

The concept of higher-order city urban functions is considered to include all those central functions which have significance above the local (city, municipal) level. Examples of this are: universities, colleges, research institutes and centres, cultural institutions of regional and national importance, but also creative industry centres or large shopping centres. One type of such functions which, according to the shrinking city theories, offers the greatest opportunities for the city's renewal – higher and college education – was selected for this analysis. The importance of the decentralisation of this sector has already been emphasised. It is often emphasised that successful small cities in Europe are precisely those that have been affected by 'studentification' (UO, 2020). Attracting students as a future higher education population is important because it has a long-term impact on the city in further attracting capital in the broadest sense (human, economic, creative, cultural). In the analysis of small and successful US shrinking cities, it was noted that they were all characterised by an above-average level of educated population in relation to other shrinking cities (Florida, 2019).

As an indicator of higher-order urban functions, the number of higher and college education institutions (universities, colleges, academies) with nationally accredited curricula was used in relation to the number of city's inhabitants. In the case of universities which are not divided into faculties, the number of divisions or departments with accredited curricula was counted.[188] The departments and university representative offices that are branches are not included in the analysis. It turned out that they usually serve to attract potential students to the city in which they are situated, that educational activities almost always take place at the headquarters of a given institution, and that the state often insists on this (*Blic*, 2018).

A comparative overview of cities according to this criterion indicates that Novi Pazar is in by far the best position with two universities and a total of 10 departments with accredited curricula.[189] This is in line with demographic trends, as Novi Pazar had the highest population growth during the 2002-2011 period (Fig. 4). Subotica, Leskovac and Vranje are also further away from larger cities and have a higher concentration of higher education institutions. It is obvious that due to the distance from larger cities, they can hardly rely on the capacities of their higher education institutions. On the other end are Smederevo, Pančevo and Sremska Mitrovica, which are close to Belgrade and Novi Sad, and where there are no such institutions, or there is only one. Similarly, lesser higher education capacities are also noted in spatially close medium-sized cities, such as those along the West Morava. This means that the spatial factor is reflected in the development of higher city functions in medium-sized cities in Serbia.

4.6 Position of a city to the nearest highway in relation to urban depopulation

Transport accessibility is becoming an increasingly important factor in the research of shrinking cities. It is being increasingly studied through globalisation theories, which start from the fact that accessibility in any sense is a great advantage for a city, region or country (Martinez-Fernandez et al., 2012). The distance of cities from important transport corridors considerably encourages urban shrinkage and is more broadly related to the emergence of the so-called 'single cities', which are characterised by poor accessibility in the form of distance from transport corridors and from other cities, especially the larger ones (Restrepo Cadavid et al., 2017). Most of the shrinking cities today are precisely those which are not well networked (Schlap-

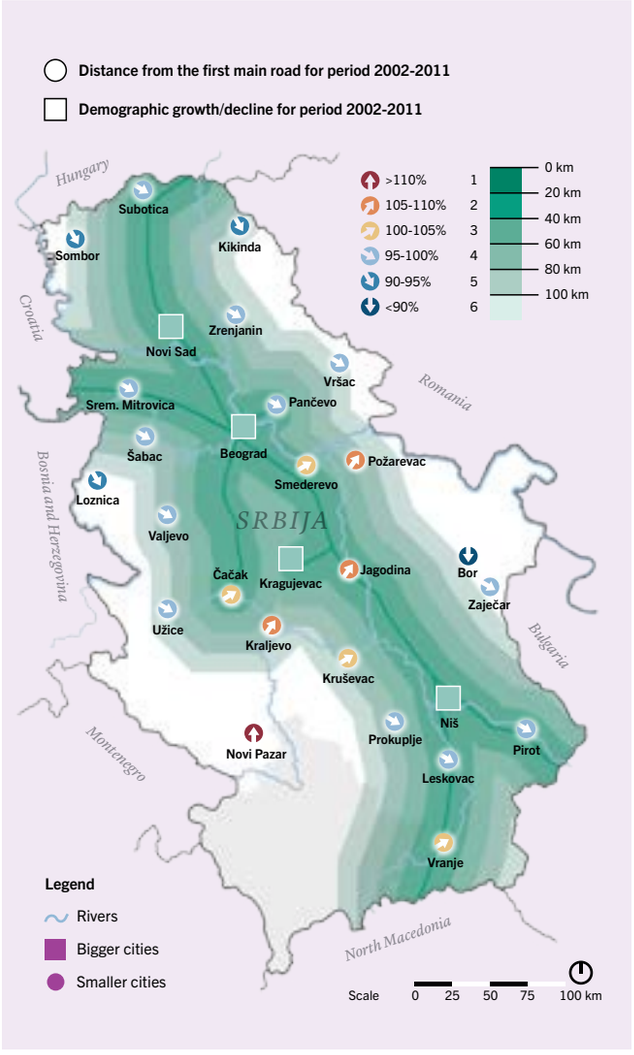

Figure 5. Distance of medium-sized cities from highways in Serbia in relation to the population decline or growth

[188] Certain (private) universities include departments whose curricula are not accredited and where standards which contribute to the development of higher education staff cannot be clearly established.

[189] Annex – table 7.

pa & Neill, 2013), so investments in transport infrastructure are considered a very important measure for the redevelopment of the shrinking cities. Certain research even suggests that improving accessibility through transport development can have a much greater impact on urban development than the application of social measures (Tighe & Ganning, 2016). In doing so, the emphasis is on all aspects of accessibility, which is not only the construction of roads, but also careful planning of the transport network[190] and improving general transport logistics through better public transport, setting up intermodal nodes and support for digital platforms for simple and timely notification of users.

This analysis explores how the distance of a medium-sized city from the nearest highway or similar four-lane road is related to demographic trends. The proximity of the highway is by far the most important measure of traffic accessibility in Serbia. The network of highways built to date (2021) is taken for the proposed analysis. Most of them have existed or been under construction for the past 10-15 years.

All cities are divided into six categories according to the criterion of distance from the highway, with the first category being all those along the highway, followed by subsequent categories every 20 kilometres.[191] Based on the overlap of this categorisation with demographic trends (Fig. 5) it is noted how the position of cities on modern roads contributes to their vitality and development. This is even more pronounced if it is known that investments in the sector of transportation are easier to plan, both spatially and temporally, than some others, which makes them an important lever in preventing (further) urban shrinkage.

4.7 Position of a city with respect to the state border and in relation to urban depopulation

The position of the city in relation to the state border is the first criterion through which we investigate the governing-administrative aspect of urban decline. State borders and border cities have become the topic of urban shrinking relatively recently, probably because the first researchers of shrinking cities were usually from territorially large countries, such as the United States, Russia, or Australia, where border cities are relatively rare, or the western half of Europe, where the 'Schengen system' of permeable or soft borders has greatly reduced the development constraints of border cities and regions. The relatively rare research in this area is found for countries which have a large number of border towns, such as the Baltic States. In such situations, a large number of cities near the 'hard' eastern borders have development problems precisely because of this obstacle (Bruneckiene & Sinkiene, 2015) and it has therefore been concluded that the level of border permeability considerably affects the development of border cities (Haase et al., 2014).

As expected, the solution for the redevelopment of shrinking border cities is to increase border permeability. The best examples are the former border cities along the former 'Iron Curtain' between Eastern and Western Europe during the Cold War. A well-known example is the distinctly border city of Trieste, which, after the expansion of the EU to the east and the 'erasure' of the hard border between Italy and Slovenia experienced redevelopment and reurbanisation (Draper, 2021). Among the examples of medium-sized cities, the example of Sopron in western Hungary is illustrative, in a 'pocket' surrounded on three sides by Austria. After decades of stagnation and decline, this city has experienced an economic and demographic revival in recent years due to the weakening of the border effect and a new opening towards the significant Austrian market in the area (Sik, 2015). In both cases, the permeability of the borders was paired with the connection of interrupted transport links, enabling the circulation of goods and the establishment of common public transport lines, which significantly increases the networking on both sides of the border.

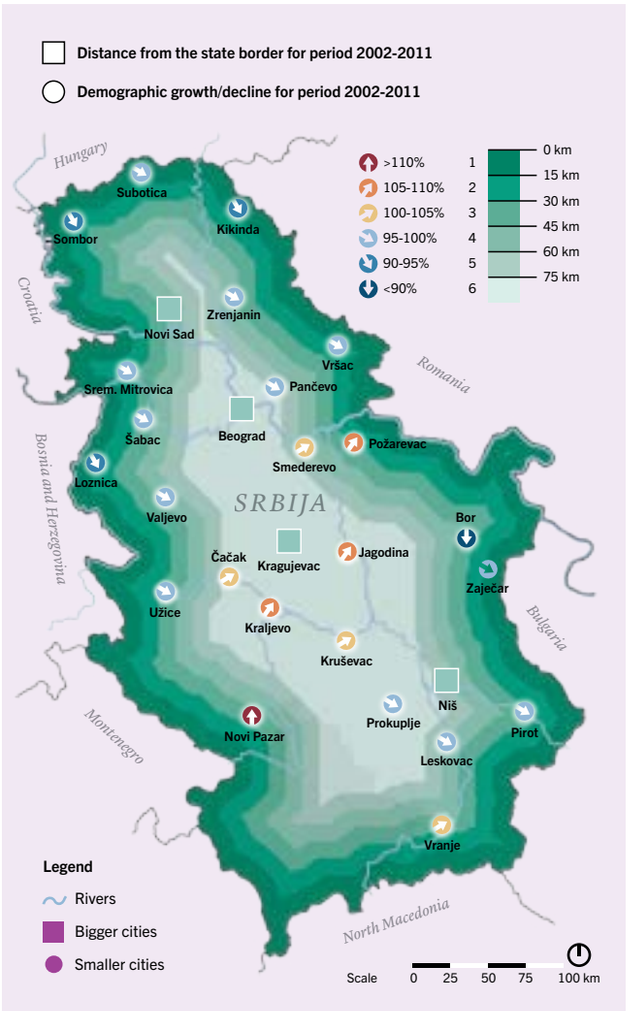

Figure 6. Distance of medium-sized cities from the nearest state border in relation to the population decline or growth

[190] Making the so-called 'blind' transport network termination points usually has a favourable impact only in the short term, while in the long term it contributes to the effect of 'sucking out' the potential from a given environment as dependent and unequal in the broader network.

[191] Annex – Table 8. Values are calculated as the distance of the city centre from the nearest highway junction. Cities where a highway intersects or touches an urban area have been assigned the 'o' value.

According to earlier findings, the proximity of the state border considerably affects the rate of urban decline in Serbia, so cities closer to the border are usually experiencing considerable shrinkage (Djukić et al., 2017). This has been confirmed at the European level, where the border areas, i.e. areas up to 25 kilometres from the nearest state border, are considered more at risk in terms of development (EUSTAT, 2018). If the 25-kilometre threshold were to be applied to Serbia, almost half of Serbian cities would be borderline, due to the size of the country and relatively long borders, which would not give a clear enough distinction between the cities themselves. Therefore, the categorisation was done at 12 kilometres, looking at the distance of the surveyed cities from the nearest state border.[192]

Aligning the obtained categories in relation to the decline or growth of the urban population (Fig. 6), the difference in influence between the old and new borders should be noted first.[193] Cities closer to the old borders, i.e. borders established after 1918 with Hungary, Romania and Bulgaria, were particularly affected by urban shrinkage. Of the four cities with a population decline of over 5%, as many as three are closest to the border tripoints with these countries: Bor (RS/BG/RO), Kikinda (RS/HU/RO) and Sombor (RS/HR/HU). Loznica, which is the only other city belonging to this group, is not close to three borders, but it is a city whose centre is closest to the state border – only 3 km from the border of Serbia with Bosnia-Herzegovina. On the other side are the cities on the Novi Sad-Belgrade-Niš central state axis and along the West Morava, further away from the border and most with demographic growth. In line with this, it can be concluded that the negative impact of the city's proximity to the state border is not only spatial, but also temporal, since the given boundary was established. The research may also indicate the favourable influence of border porosity[194] for cities closer to the borders of Serbia with Bosnia-Herzegovina, Montenegro and North Macedonia.

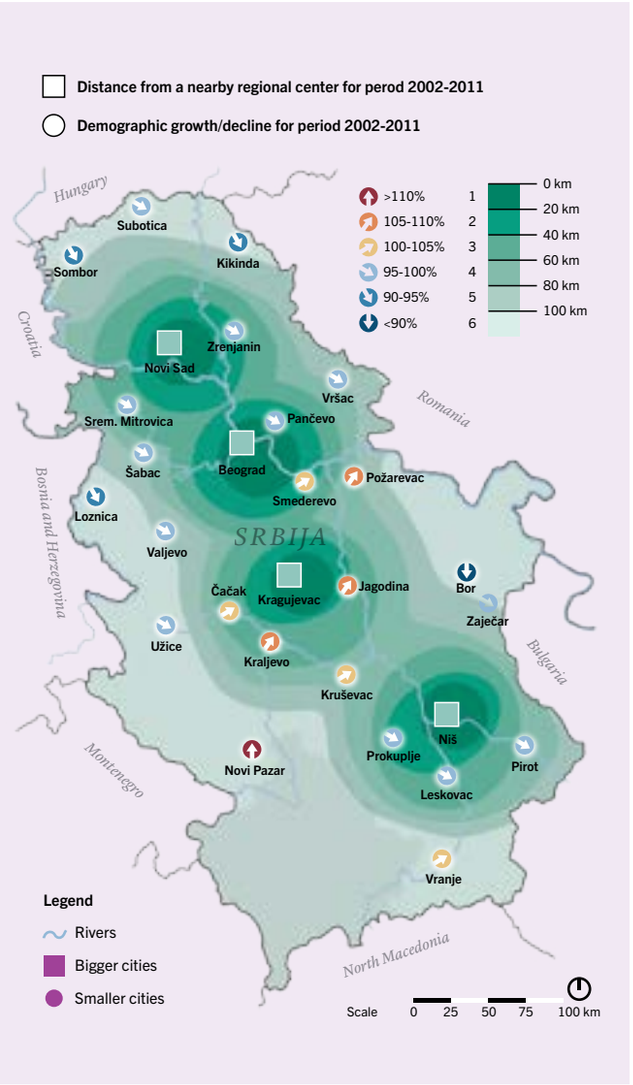

Figure 7. Distance of medium-sized cities from the nearest larger city in Serbia in relation to the population decline or growth

4.8 Position of a city with respect to larger cities and in relation to urban depopulation

Most international research distinguishes between the shrinking of larger and smaller cities, where the demographic threshold is mostly at 100,000 inhabitants.[195] In Serbia, this coincides with the difference between the four larger cities – Belgrade, Novi Sad, Niš and Kragujevac – and medium-sized cities. These four cities are also the centres of the statistical NUTS2 regions of Serbia.[196] Medium-sized cities in this research are mostly the most important centres of the NUTS3 level.

In the former socialist states, single cities, as the most susceptible to urban shrinking, in addition to being isolated from the transport network, are further away from others, especially larger cities (Restrepo Cadavid et al., 2017).[197] This means that the impact of the distance of one city from its neighbouring cities, and especially from the closest cities of greater size and importance, should be reduced to a minimum. One of a series of measures to achieve this is the development of transport infrastructure, but also the strengthening of local networks of small and medium-sized cities so that they can jointly over-

[192] The distance of the city boils down to the linear distance of the city centre from the nearest state border.

[193] Annex - Table 9.

[194] It is almost certain that the lack of language barriers for given countries also reduces the impact of the border.

[195] This is how most of the international surveys of shrinking cities determine the threshold between large and medium-sized cities.

[196] This nomenclature is part of the EU geocoding standard. It is also known by its French acronym NUTS (Fr. *nomenclature des unités territoriales statistiques*), and in Serbia the acronym NSTJ (*nomenklatura statističkih teritorijalnih jedinica*) is used. There are officially five NUTS2 regions in Serbia, but there are no data for the region of Kosovo and Metohija (under UN Resolution 1244).

[197] This is indirectly related to the issue of densities in spatial development, i.e. at the regional level, where the general rule is that higher population densities, as well as the higher network of cities, settlements and gathering hubs, are more favourable for development, because they help reduce distances, and, usually, also costs.

come their lag in relation to larger cities.[198] Cities in such networks will look for their place, which usually entails a certain specialisation in relation to the environment. This leads to polycentric spatial development in a territory.

In this part of the analysis, the distance of the researched cities from the nearest of the four larger cities in Serbia is examined, on the basis of which a categorisation is made into six categories according to the 20 km distance.[199] The categorisation of cities according to this criterion[200] shows that the proximity of a larger city has a twofold effect on the change in the number of inhabitants in a medium-sized city (Fig. 7). As expected, the cities furthest from larger cities are in the worst position, as this usually coincides with the already established adverse effect of proximity to the state border. However, several cities closest to the larger ones (Pančevo, Prokuplje, Sremska Mitrovica, Zrenjanin) also had a demographic decline, which indirectly indicates that their position as a district seat was diminished by the influence of the nearby larger city. Cities which are moderately distant are in the best position and most from this group register growth or only slight decline. They obviously have the best balance because they are not too far behind the development axes in the country and they are also not too close to larger cities, to be in their shadow.

4.9 Housing characteristics in relation to urban depopulation

Hosing vacancies are often considered a good indicator of urban shrinking and are easily noticed by ordinary people as well (Couch & Cocks, 2013). That is why housing vacancies are one of the biggest problems of cities with extreme shrinkage.

In shrinking cities, various models of reuse and renewal of the housing stock are used, in addition to the already mentioned removal of unnecessary buildings and houses, more specific for extreme urban shrinkage. The first model is the conversion of the housing stock for tourism purposes in cities which are attractive for tourists. For example, there is the model of albergo diffuso (dispersed hotel) in small towns in northern Italy, where several residential units in older parts of the city are converted into a multi-building hotel. The dispersion of such developments requires constant circulation of users, which further revives the open spaces of the old city (Confalonieri, 2011). Similar to this is the model of transforming central residential neighbourhoods and blocks into business and service areas with the local economy growth based on post-industrial urban development. The third model is represented in some parts of Eastern Europe, where the merging of relatively frequent small housing units in multi-family housing from the socialist era into larger dwellings, more suitable for families with children, is encouraged. The fourth model is to incentivise housing construction even where there is no need for it, but which becomes a 'safe investment'.

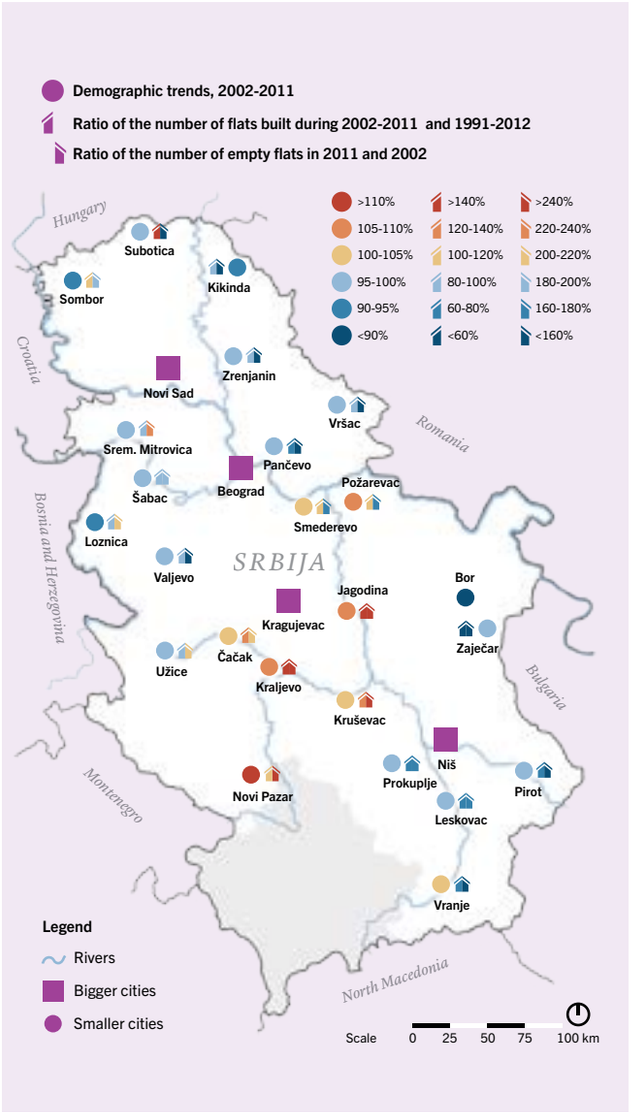

Figure 8. Trends in the number of new and empty dwelling units in relation to the population decrease or growth

There follows an analysis of the character of changes in the number of permanent dwellings in the 2002-2011 period, especially those that are vacant (i.e. uninhabited) and their increase or decrease in relation to the change in the number of households for the same period.

The number of dwellings in the surveyed cities increased during the 2002/2011 period, but at the same time the number of empty dwellings grew, in the case of Bor and Prokuplje, even faster than the total.[201] The number of vacant (unoccupied) dwellings grew incomparably faster than the total number of dwellings, often by over 200%. According to the share in 2011, vacant dwellings were to be found mostly in two types of cities: shrinking cities (Prokuplje, Loznica) and in growing cities, which

[198] An example of this is the proposal to strengthen the shrinking medium-sized cities in the broader Berlin region, which are not its suburbs, but are not completely independent due to the proximity of this metropolis (Zakirova, 2010).

[199] Distance is calculated as the driving distance using state roads. For the sake of balance between the obtained categories, the first category includes a distance range of 0-30 km.

[200] Annex - Table 10.

[201] Annex – Table 11.

are also special cases being located in the parts of Serbia (Požarevac, Jagodina) that have traditionally produced a large number of migrant workers, and where the expansion of the housing stock can be interpreted as the aforementioned 'safe investment' by local expatriates.[202]

In most cities, the development of housing at the local level is accompanied by demographic trends, so a city's shrinking was usually accompanied by an above-average growth in the number of vacant dwellings and a decrease in the volume of new housing construction (Fig. 9). The biggest deviations from this pattern are seen in the case of Subotica, where the ethnic characteristics of the city precipitated the decline in the last decade of the socialist era (during the 1980s), rendering the recent rise in the number of vacant dwellings insignificant because it had been considerably higher than in other cities for decades.

Finally, it should be borne in mind that, since 2011, there has been significant housing construction in the analysed cities, especially in multi-family housing. A considerable number of new housing units have specifically been purchased as a safe investment. Therefore, it should be assumed that in the meantime, the number of empty (new) dwellings has increased considerably.

5 Action Rationale

5.1 A new depopulation framework in Serbia from the urban shrinkage perspective

Analysis according to the selected criteria indicates certain findings. In the following sections, we will provide a comparative analysis of the results according to all criteria and the overall categorisation of cities (C).

The comparison of the categories of cities regarding population growth or decline and their cumulative performance according to other criteria, shows that, in as many as 21 cities (88%), the given categories match, or vary in only one category, which validates the choice of criteria[203] - they generally follow demographic trends well.

The four demographically most vulnerable cities with declining populations (C0) of over 5% (Bor, Kikinda, Sombor and Loznica) are also in the category of cities which in total had the worst overall performance according to the C1-C9 criteria. There are, however, two cities in which the differences in the two categorisations are considerable (±3 and ±4), so they are worth considering. Novi Pazar has the biggest difference in favour of demographic growth. Of the cities surveyed, it grew the fastest demographically during the 2002-2011 period, but according to the results for other criteria, it falls under the fourth category. This

No.	City	C0	C1	C2a	C2b	C2v	C3	C4	C5	C6	C7	C9a	C9b	C1-9 Total	Cat.
1	Bor	**6**	6	1	1	1	6	3	6	1	6	6	5	33.00	**6**
2	Valjevo	**4**	3	4	4	4	1	3	3	4	5	4	6	41.67	**3**
3	Vranje	**3**	4	5	3	5	3	2	1	5	5	5	6	27.17	**4**
4	Vršac	**4**	6	1	3	2	2	3	5	6	4	4	6	24.33	**6**
5	Zaječar	**4**	6	4	5	5	6	3	6	5	5	6	6	35.00	**6**
6	Zrenjanin	**4**	2	2	4	5	2	3	4	4	3	5	6	22.67	**3**
7	Jagodina	**2**	5	5	3	5	5	4	1	1	3	1	1	24.83	**2**
8	Kikinda	**5**	6	3	2	4	2	3	5	6	5	4	6	27.00	**6**
9	Kraljevo	**2**	1	5	4	5	4	5	3	1	3	1	1	39.83	**1**
10	Kruševac	**3**	2	5	5	3	4	5	3	1	4	2	1	31.00	**2**
11	Leskovac	**4**	3	6	5	4	5	2	2	4	2	5	5	20.67	**3**
12	Loznica	**5**	5	6	5	5	3	6	5	6	6	4	3	31.83	**6**
13	Novi Pazar	**1**	1	6	6	6	5	1	6	5	6	3	1	26.00	**5**
14	Pančevo	**4**	1	2	2	1	5	5	1	3	1	3	5	28.33	**1**
15	Pirot	**4**	5	2	4	4	4	4	1	5	4	5	6	25.00	**5**
16	Požarevac	**2**	5	1	1	1	2	4	2	5	4	3	5	33.50	**2**
17	Prokuplje	**4**	6	5	5	6	5	2	3	1	1	5	5	28.33	**4**
18	Smederevo	**3**	2	2	3	4	3	6	2	4	2	3	5	25.00	**2**
19	Sombor	**5**	5	4	3	5	3	4	4	5	5	3	4	33.50	**6**

[202] This phenomenon has not been further investigated so far. The first field research shows that the local population that has recently gone abroad still has strong ties to the homeland and the cities of its origin, which is also reflected in the purchase of real estates. However, there seem to be other important reasons, such as the inability to buy real estate in a place of residence abroad, where real estate prices are often much higher. Therefore, safe investment takes place in a place where there is better availability of this type of investment, i.e. in a city in Serbia. This can be proven by the fact that in this way apartments are purchased much more than smaller houses in medium-sized cities in Serbia for similar prices, but with much lower monthly maintenance costs for apartments.

[203] The last two columns from Table 12 – The sum of criteria and categorisation based on it.

20	Sremska Mitrovica	**4**	4	3	3	3	5	5	1	5	3	4	2	29.00	**4**
21	Subotica	**4**	1	3	3	4	5	2	2	6	5	1	6	27.83	**3**
22	Užice	**4**	3	2	3	5	5	3	5	5	6	4	3	32.83	**6**
23	Čačak	**3**	1	4	4	5	4	4	1	2	3	2	3	20.83	**1**
24	Šabac	**4**	2	4	5	4	2	3	3	5	4	4	4	26.33	**3**

Table 5. Categorisation (CAT) of cities according to the analysed criteria in relation to the population growth or decline (criterion – C).

shows the impact of higher education on demographic conditions at the local level, because Novi Pazar differs significantly from other cities only by this criterion. In contrast we have Pančevo, which has high scores according to a number of criteria, but still lost population over the observed period. This can be interpreted through the negative impact of the proximity of Belgrade, and is typical of cities in the so-called 'outer ring' of metropolises.

They are not too close to be their 'ordinary' growing suburbs, and, on the other hand, they are not far enough away to avoid the attractive power of the metropolis. This reduces their centrality with respect to their size, which further slows down the development of such settlements.

Based on the previous table, it is seen that the change in the number of inhabitants in the surveyed cities is accompanied by other unfavourable development constraints and trends, as follows:

No.	City	C0: Population change	The three most unfavourable features of the city based on C1-C9 criteria
1	Bor	large decline	Deindustrialisation, distance from larger cities and from the nearest highway
2	Valjevo	small decline	Distance from larger cities, poor financial conditions, low share of higher education institutions
3	Vranje	small growth	Distance from larger cities, border vicinity, poor financial conditions
4	Vršac	small decline	Border vicinity, small size of the city and areas of influence, distance from the nearest highway
5	Zaječar	small decline	Border vicinity, deindustrialisation and areas of influence, distance from the nearest highway
6	Zrenjanin	small decline	Distance from the nearest highway, poor financial conditions, border vicinity
7	Jagodina	moderate growth	Large spatial distribution of the city, deindustrialisation, poor financial conditions
8	Kikinda	moderate decline	Border vicinity, distance from the nearest highway and from larger cities
9	Kraljevo	moderate growth	Large spatial distribution of the city, lack of higher education, poor financial conditions
10	Kruševac	small growth	Large spatial distribution of the city, lack of higher education, poor financial conditions
11	Leskovac	small decline	Poor financial conditions, deindustrialisation, the size of the city in relation to the area of influence
12	Loznica	moderate decline	Border vicinity, distance from larger cities, poor financial conditions
13	Novi Pazar	large growth	Poor financial conditions, distance from the highway and from larger cities
14	Pančevo	small decline	Deindustrialisation, lack of higher education, large spatial distribution of the city
15	Pirot	small decline	Border vicinity, large spatial distribution of the city, small size of the city and areas of influence
16	Požarevac	moderate growth	Small size of the city, large spatial distribution of the city, lack of higher education
17	Prokuplje	small decline	Small size of the city and areas of influence, poor financial conditions, deindustrialisation
18	Smederevo	small growth	Lack of higher education, large spatial distribution of the city, deindustrialisation
19	Sombor	moderate decline	Border vicinity, distance from the nearest highway and from larger cities
20	Sremska Mitrovica	small decline	Lack of higher education, deindustrialisation, small city size and areas of influence
21	Subotica	small decline	Border vicinity, distance from larger cities, deindustrialisation
22	Užice	small decline	Distance from larger cities and from the nearest highway, deindustrialisation
23	Čačak	small growth	Large spatial distribution of the city, lack of higher education, poor financial conditions
24	Šabac	small decline	Poor financial conditions, large spatial distribution of the city, distance from larger cities

Table 6. Population change 2011-2022 and the three most unfavourable features of the researched cities

Taking everything into account, it can be concluded that the results according to criterion (C7) of the distance of the studied cities from the larger cities closest to them coincide best with the demographic growth or decline of the studied cities. The medium-sized cities in Serbia differ from the four larger cities particularly in not being centres of higher education, not offering many good quality jobs that require high expertise and the mastery of new technologies and not providing a variety of leisure content (culture, entertainment, trade, services, etc.). This finding should suggest that medium-sized cities especially lack the following for their further development: (1) higher education and scientific research institutions, which indirectly encourage the development of the higher education sector and highly qualified jobs, (2) better conditions for spending free time, and (3) not (only) opening of industrial plants and related new jobs, which mainly require the secondary degree of education, as is often emphasised both by representatives of the city administration and in the media.

5.2 Action: the bigger picture

The analysis of medium-sized cities in Serbia confirms the influence of (1) deindustrialisation as a long-standing factor of urban shrinkage, (2) lack of highly qualified jobs and (3) weak transport links and networking as previously highlighted factors. Furthermore, it reaffirms the importance of (4) higher education and (5) leisure content as important tools for the desired redevelopment of shrinking cities.

In contrast, some (unfavourable) features of the researched cities are also identified, which are not sufficiently emphasised in the discourse

No.	SDG	Sets of measures - explanation
		City – broader surroundings measures
M.01	C.10 C.16	**Strengthening district seats:** Greater administrative decentralisation or devolution of the state at the district level through education and strengthening of district authorities in their seats. Decentralisation should be thereby implemented in jurisdictions from economic and cultural fields, as critical ones for the stabilisation of local demographic circumstances, while the measure of the de-concentration of government is more applicable for social and environmental fields. This approach enables better accessibility of government, as well as the better balance of high-skilled places in the public sector across the country.
M.02	C.09 C.10	**Intersectoral development centres:**[204] Central development institutions at the district level with sectors for incentivising, strategic planning and proactive action in the field of integrated regional development. These centres would also include technology parks or business incubators as systemic support to young professionals for launching start-up projects.
M.03	C.04 C.09	**City thematisation:** Encouraging the thematisation of cities based on their economic characteristics through the development of higher education centres or research at the level of specialised and postdoctoral education, with a clear link to the local economy.
M.04	M.09	**Construction of high-speed roads**[205] towards larger cities in the area in order to create a branched traffic network, i.e. without 'blind directions' with individual cities at the end of them.
M.05	M.16	**Permeable borders:** Opening of border crossing points in the parts of the state border where they are rare, and application of measures for easier border crossing at the existing ones (integrated border crossing points, raising the importance of crossings: regional traffic > international traffic).
M.06	C.11 C.17	**Flagship projects:** Development and construction of flagship projects, but only in cities with particularly valuable and unique culture and heritage features, important for promoting the country and beyond.[206]
		City – immediate surroundings measures
M.07	M.17	**City alliances and networks:** Incentivising regional associations and city networks based on special features (historic cities, trade fair cities, industrial cities, etc.).
M.08	M.09	**Transverse connections:** Construction of rapid thoroughfares to cities in the immediate vicinity, especially those which are transverse in relation to transport routes to larger cities, in order to establish and strengthen local networking.
M.09	M.05 M.17	**Entrepreneurial associations:** Support to local and district associations of small entrepreneurs for joint action on the market and for the purposes of promotion.
M.10	M.08 M.09	**Mega-business zones:** Development of strategically located and communally equipped business zones in cities with above-average unemployment and low salaries and incomes.
M.11	M.07 M.10	**Public transport:** Regulation of suburban and intercity transport to the surrounding municipalities and smaller cities through incentives and strengthening of the local network with the city as a clear hub (main transfer point).
		Measures within urban area
M.12	M.08 M.09	**Business-creative incubators:** Development of business-creative incubators through new construction or the reuse of existing space in important city spots for the purpose of promoting the preservation of highly educated staff in the private sector, with emphasis on new technologies, digitalisation and creative industries.
M.13	M.05 M.08	**Zones of new urban functions:** Transformation of planned manufacturing-industrial zones through an expanded range of possible functions (transport and logistics, business, wholesale, etc.).
M.14	M.12	**Functional renewal of city centres:** Renovation of city centres in a functional sense through planned incentivising for the construction of shopping centres and the design of shopping streets, while respecting the existing ambience values.
M.15	M.06 M.11	**Housing nodes:** Renovation of existing housing capacities in strategically important spots in the city, where there is a greater concentration of jobs and leisure content at the same time.

Table 7. Recommended measures for stabilising shrinking cities

[204] It is important to underpin that the association and cooperation between the units of self-government (municipalities and cities) in Serbia is already possible by operative Law on Local Self-Government (Articles 88a-88d). Nevertheless, this cooperation is on a voluntary basis, which calls in question the obligation of such associations, as well as their efficiency and the duration of the results achieved through this form of collaboration.

[205] Here, in addition to highways and other four-lane roads, high-speed roads also include two-lane roads which bypass settlements and have multi-level junctions, which ensures higher speed and the easier flow of vehicles.

[206] For example, the formation of a cultural-museum district in Sombor, as a city with the best-preserved old town among medium-sized cities in Serbia, a cultural and educational centre on mining in Bor or ancient Roman archaeological sites in Sremska Mitrovica.

No.	Cluster	Cities	Priority measures	Special measures (M.06)
Two basic measures for all cities (clusters)			• M.01: Strengthening district seats • M.02: Intersectoral development centres	
1	Border towns	Vršac, Kikinda, Zaječar, Loznica, Pirot, Sombor	• M.05: Permeable borders • M.08: Transverse connections • M.13: Zones of new urban functions • M.15: Housing nodes	**Sombor:** Flagship projects (the best preserved old town)
2	Mono-structural cities	Bor, Užice	• M.07: City alliances and networks • M.10: Mega-business zones • M.11: Public transport • M.13: Zones of new urban functions	**Bor:** Flagship projects (Serbian mining centre)
3	Cities in shadow of bigger cities	Zrenjanin, Pančevo, Prokuplje, Smederevo, Sremska Mitrovica	• M.03: City thematisation • M.08: Transverse connections • M.09: Business associations • M.14: Functional renovation of city centres	**Smederevo:** Flagship projects (the largest medieval fortress in the country, industrial heritage) **Sremska Mitrovica:** Flagship projects (the most valuable ancient heritage in Serbia)
4	Axial cities[207]	Valjevo, Vranje, Jagodina, Kraljevo, Kruševac, Leskovac, Požarevac, Subotica, Čačak, Šabac	• M.03: City thematisation • M.10: Mega-business zones • M.12: Business-creative incubators • M.15: Housing nodes	**Kruševac:** Flagship projects (old capital of Serbia)
5	Cities with intensive growth	Novi Pazar	• M.04: Construction of high-speed roads • M.09: Business associations • M.10: Mega-business zones • M.12: Business-creative incubators	**Novi Pazar:** Flagship projects (extremely valuable medieval and Ottoman heritage)

Table 8. Clusters of medium-sized cities with priority measures

on urban shrinkage at the global level. For example, the impact (6) of the proximity to the state border is very pronounced in the analysed cities, which is in line with the fact that Serbia is a relatively small country with far from soft borders. In terms of financial conditions, there (7) is a much greater impact on local demographic dynamics if local incomes are lower than average salaries, because the money earned is apparently spent elsewhere, in larger cities and tourist destinations, which is not reflected in the improvement of opportunities in the analysed cities. It should be noted that (8) the degree of local investment has proven to be a fairly reliable indicator of the demographic vitality of an area, and its importance is even greater when it is known that investments indicate the future prospects rather than the current state of a city.

5.3 Action rationale

Based on the previous findings on urban shrinkage in Serbia and their understanding from the perspective of global information about the phenomenon of urban shrinkage, appropriate sets of measures are proposed for the analysed medium-sized cities, which are additionally linked to certain UN Sustainable Development Goals (SDGs). In accordance with the already emphasised importance of these cities for the balance of the spatial demographic development of the state, the implementation of the proposed measures would have an indirect impact both at the regional level and on the dependent rural area.

5.4 Where to start? Initial steps

The first two sets of proposed measures – Strengthening district seats (M.01) and Intersectoral development centres (M.02) – represent the first step in implementing development according to the set of city clusters. The implementation of these measures is a precondition for the rest. The highest level of state government plays the most important role in their implementation, as by far the most organised and influential, given the high level of centralisation of the Republic of Serbia. Levels other than the provincial level are unable to take the initiative in implementing the measures in the first step. The municipal level, i.e. the level of local self-government units can only partially implement it, and then only the largest local self-government units, while for many small and underdeveloped municipalities with a lack of highly qualified staff this is impossible. The district level, as mentioned earlier, is a number of state administration branches at the regional level, and in the current system it does not have the capacity to be a significant factor in the implementation of measures.

[207] This refers to the cities that are already located along the main development axes of the country – the main transportation corridors.

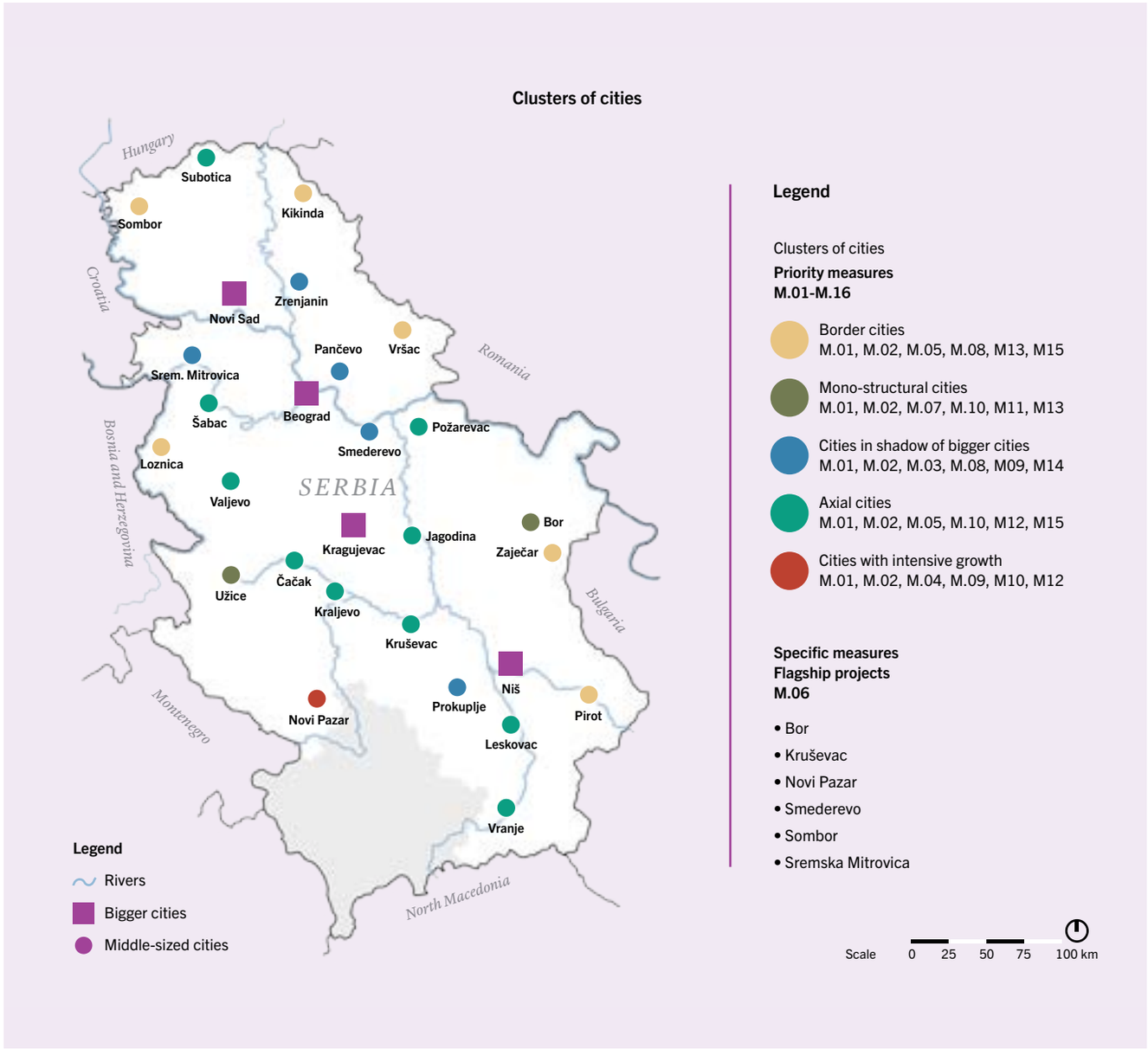

Figure 9. Division of medium-sized Serbian cities by clusters

However, the district level with medium-sized cities as their centres is precisely the level at which the greatest contribution can be made to balancing the spatial development of Serbia. Today, the district level is mostly related to several small bodies of regional importance, such as regional offices and agencies for economic or rural development. In this part, through the implementation of M.01 and M.02 measures, the goal is to achieve both qualitative and quantitative balance. Through the creation of intersectoral development centres, a model of integration of all sectors crucial for development into one institution is proposed for the purpose of harmonised action and development. This would create a framework for the employment of a larger number of highly educated professionals of various profiles at the level of medium-sized cities, which strengthens the staff base necessary for the current post-industrial development. Third, an integrated approach and significant staff capacity indirectly enable the encouragement of innovation, digitalisation and creativity, as well as the creation and management of more complex projects. A large number of municipalities in Serbia cannot achieve this on their own, and support from the national and provincial levels is usually insufficient. Fourth, a base of key future consumers of important post-industrial economic development sectors would be created, such as services, trade, entertainment, creative industries, ICT sector and the like.

The development of the district level does not call into question the importance of the national and provincial levels. The district level would be strengthened to ensure that the main measures and strategies of the higher level are properly adjusted and developed according to local conditions and then implemented together with the municipalities from the given district.

6 How to continue?

6.1 Next steps

The accompanying table provides a proposal of steps and their main implementing institutions and stakeholders.

No.	Step with measures	Implementing institution - level	Stakeholders
1	**City - broader surroundings measures** M.01 Strengthening district seats M.02 Intersectoral development centres	• State through ministries • Province through the secretariats	• District bodies • Cities – district centres • International level
2	**City - immediate surroundings measures** M.07 City alliances and networks M.08 Transverse connections M.09 Business associations M.10 Mega-business zones M.11 Public transport	• Newly established district intersectoral development centres • State through ministries and other bodies (agencies, administrations, public companies) • Province through the secretariats and other bodies	• Cities – district centres • Municipalities • Important representatives of the private sector • Professional associations
3	**Measures within the urban area** M.12 Business-creative incubators M.13 Zones of new urban functions M.14 Functional renewal of city centres M.15 Housing nodes	• District intersectoral development centres • Supervision and logistical support: state and provincial level	• Cities – district centres • Municipalities • Private sector • Creative sector • Professional associations • Citizens' associations
2–3	**City - broader surroundings measures** M.03 City thematisation M.04 Construction of high-speed roads M.05 Permeable borders M.06 Flagships projects	• State through ministries • Province through the secretariats • Logistics support: newly established district intersectoral development	• Cities and municipalities • Private sector • International level

Table 9. Next steps in implementing the proposed measures

This can be presented as a diagram, as follows:

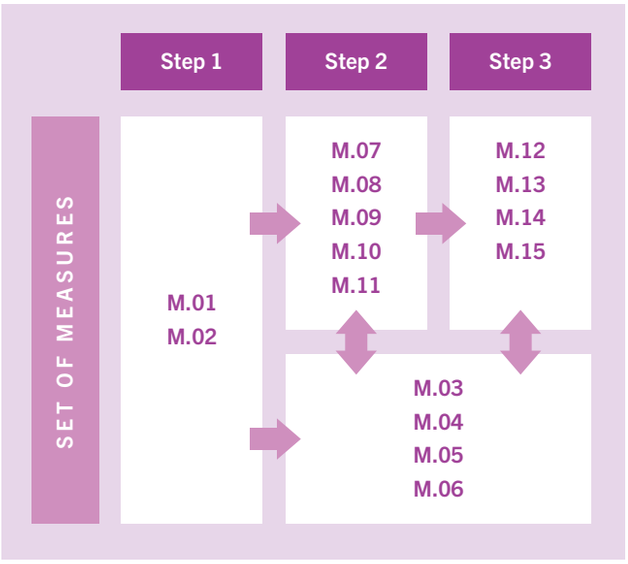

Figure 10. Diagram of steps for implementation with sets of measures

6.2 Digitalisation as a step in the future development of shrinking cities

The use of information and communication technologies (ICT) and digitalisation in its broader meaning is a special imperative in the implementation of the proposed measures for middle-sized cities in Serbia, with the ultimate aim of their development according to the state-of- art model of smart cities. Furthermore, the element of 'smartness' should be taken in its broader meaning, where it implies not only the direct use of ICT tools and the mere process of digitalisation, but also the creation of an ambience where local government and communities accept and use this potential on sustainable principles for general welfare. This especially includes the use of ICT tools and digitalisation in an inclusive way (UNDP, 2021). In accordance with this conclusion, each proposed measure is further elaborated by the tools of a smart city critical for their implementation:

Measure 01 STRENGTHENING OF DISTRICT SEATS through (1) an integrated web portal at district level with links to other government levels (municipal, national, provincial); (2) a special inter-sector unit within the district government for ICT support and digitalisation for local self-governments and communities; and (3) a service centre for the training of local civil servants, businessmen, entrepreneurs and citizens, aiming at the enhancement of digital literacy and the development of an information society.

Measure 02 INTERSECTORAL DEVELOPMENT CENTRES through (1) an intermunicipal web platform for support to innovations, research and development and nurturing of talent, entrepreneurship and completeness; (2) a web platform for development projects pertaining to district level – calls and competitions, technical and professional assistance, best practice and e-conferences and e-consultations; and (3) a web portal for professional incubators, start-up projects and support for entrepreneurs from vulnerable groups (in particular, young professionals, women, persons with physical disabilities, minorities, etc.).

Measure 03 THEMATISATION OF CITIES through (1) science and technology parks in smaller cities that are closely related to existing local institutions of higher and high education; and (2) the opening of postdoctoral positions in the projects which target digitalisation and smart management of the local economy.

Measure 04 CONSTRUCTION OF HIGH-SPEED ROADS through (1) the digitalisation of areas along these corridors; and (2) better logistics of travel through ICT devices – digital navigation, real-time information, instructions for avoiding traffic jams, road works and slow sections.

Measure 05 PERMEABLE BORDERS through (1) the digitalisation of border crossings as much as possible – the digital registration of goods and commodities, online check-in and real-time reports about possible delays at border crossings.

Measure 06 FLAGSHIP PROJECTS through (1) web presentation of the projects parallel to the implementation of physical measures; and (2) the modernisation of all projects of this type with their own web sites, created in an innovative way and regularly updated.

Measure 07 CITY ALLIANCES AND NETWORKS through (1) networking projects in the field of digitalisation and information society.

Measure 09 ENTREPRENEUR ASSOCIATIONS through (1) a service centre for training local civil servants, businessmen, entrepreneurs and citizens, aiming at the enhancement of digital literacy and the development of an information society; and (2) the planned facilitation of the project which emphasises the strengthening of awareness about digitalisation and the smart-city movement: trainings, workshops, promotions.

Measure 10 MEGA-BUSINESS ZONES through (1) the conditioning of the development of mega-zones by the creation of the environment that facilitates the development of an information society: ultra-speed internet, web presentation, user services for the whole zone, etc.

Measure 11 PUBLIC TRANSPORT through (1) the digitalisation and better ICT logistics of public transport at both district and national levels, as a means to promote sustainable types of transport (public transport, walking, cycling).

Measure 12 BUSINESS-CREATIVE INCUBATORS through (1) the special segments of the aforementioned inter-municipal web platform for assistance to innovations, research and development, which pertain to creative industries and the creative sector, including the measures related to urban space, such as creative hubs and the renewal and reuse of existing underused buildings for new creative jobs; and (2) support to professional associations and joint functioning of stake- holders in the creative sector.

Measure 13 THE ZONES OF NEW URBAN FUNCTIONS through (1) the creation of web and digital bases for such locations ('location banks') and other promotional digital tools to help activate these zones faster.

Measure 14 THE FUNCTIONAL RENEWAL OF URBAN CENTRES through (1) the digitalisation of open public space and public institutions through the new modes of communication (digital services, QR codes, augmented and virtual reality); (2) the digitalisation of local cultural and natural heritage, also including the intangible heritage of cities (old crafts, tradition, festivities, customs); and (3) upgrading the digital literacy of citizens to use of these tools through workshops, trainings and spatial actions.

Measure 15 HOUSING NODES through (1) planned support to the general digitalisation of citizens through more accessible and cheaper internet in dwelling spaces, (2) the upgrading of digital literacy through the enhancement and widening of the offer of digital services.

Acknowledgment

Special thanks to Katarina Dankov, Master of Architecture from the Urbanism module, for her assistance with the graphic presentation.

7 Annex

No.	City	Average salary (2019)		Budget revenues Per capita (2019)		Investments[208] Per capita (2019)	
		Amount in RSD	In %	Amount in RSD	In %	Amount in RSD	In %
Serbian average		**54,919**	**100.0%**	**47,400**	**100.0%**	**133.6**	**100.0%**
1	Bor	61,031	111.1%	47,496	100.2%	222.2	166.3%
2	Valjevo	48,673	88.6%	35,363	74.6%	64.9	48.6%
3	Vranje	45,969	83.7%	38,651	81.5%	45.7	34.2%
4	Vršac	56,456	102.8%	41,281	87.1%	114.5	85.7%
5	Zaječar	48,144	87.7%	30,291	63.9%	38.5	28.8%
6	Zrenjanin	52,719	96.0%	36,998	78.1%	42.9	32.1%
7	Jagodina	44,225	80.5%	42,591	89.9%	41.6	31.1%
8	Kikinda	50,648	92.2%	47,327	99.8%	54.7	41.0%
9	Kraljevo	46,449	84.6%	33,423	70.5%	50.7	37.9%
10	Kruševac	46,616	84.9%	28,673	60.5%	98.3	73.6%
11	Leskovac	43,619	79.4%	28,826	60.8%	56.2	42.1%
12	Loznica	43,526	79.3%	28,634	60.4%	46.5	34.8%
13	Novi Pazar	41,302	75.2%	27,209	57.4%	21.0	15.7%
14	Pančevo	54,134	98.6%	43,574	91.9%	283.6	212.3%
15	Pirot	54,134	98.6%	34,652	73.1%	78.2	58.5%
16	Požarevac	57,150	104.1%	53,208	112.3%	205.8	154.0%
17	Prokuplje	45,805	83.4%	31,887	67.3%	10.5	7.9%
18	Smederevo	53,511	97.4%	38,444	81.1%	67.0	50.1%
19	Sombor	48,562	88.4%	39,064	82.4%	28.8	21.5%
20	Srem. Mitrovica	50,247	91.5%	38,913	82.1%	90.3	67.6%
21	Subotica	51,236	93.3%	40,965	86.4%	63.1	47.2%
22	Užice	52,211	95.1%	42,018	88.6%	45.8	34.3%
23	Čačak	46,794	85.2%	33,905	71.5%	48.2	36.1%
24	Šabac	48,586	88.5%	32,884	69.4%	57.3	42.9%
	Belgrade	*68,140*	*124.1%*	*70,797*	*149.4%*	*243.3*	*182.1%*
	Kragujevac	*52,453*	*95.5%*	*42,124*	*88.9%*	*74.0*	*55.4%*
	Niš	*51,009*	*92.9%*	*36,424*	*76.8%*	*41.0*	*30.7%*
	Novi Sad	*60,466*	*110.1%*	*65,483*	*138.1%*	*374.5*	*280.3%*

Table 10. Financial indicators for surveyed cities

Source: Gavrilović, 2020

[208] Data refer to large and medium-sized legal entities.

No.	City	Employees in the manufacturing industry (MI) in relation to active population (AP) and growth/decline in their share								
		2002 Census				2011 Census				MI/AP 2002/11
		AP	MI	MI/AP	In%	AP	MI	MI/AP	In%	
Data for Serbia		**2,642,987**	**630,129**	**0.238**	**100.0%**	**2,304,628**	**396,392**	**0.172**	**100.0%**	**72.1%**
1	Bor	21,118	6,540	0.310	129.9%	16,362	2,879	0.176	102.3%	56.8%
2	Valjevo	37,609	7,848	0.209	87.5%	35,500	7,549	0.213	123.6%	101.9%
3	Vranje	33,736	13,320	0.395	165.6%	24,915	8,196	0.329	191.3%	83.3%
4	Vršac	18,938	5,331	0.281	118.1%	15,822	4,214	0.266	154.8%	94.6%
5	Zaječar	22,566	4,989	0.221	92.7%	17,878	1,980	0.111	64.4%	50.1%
6	Zrenjanin	46,549	11,981	0.257	108.0%	39,012	9,354	0.240	139.4%	93.2%
7	Jagodina	23,600	8,060	0.342	143.2%	22,168	4,943	0.223	129.6%	65.3%
8	Kikinda	22,970	7,695	0.335	140.5%	18,064	5,676	0.314	182.7%	93.8%
9	Kraljevo	42,022	10,411	0.248	103.9%	38,262	6,679	0.175	101.5%	70.5%
10	Kruševac	46,084	15,407	0.334	140.2%	35,880	8,643	0.241	140.1%	72.1%
11	Leskovac	53,621	12,775	0.238	99.9%	38,260	5,895	0.154	89.6%	64.7%
12	Loznica	28,752	6,947	0.242	101.3%	20,096	3,932	0.196	113.8%	81.0%
13	Novi Pazar	23,987	6,291	0.262	110.0%	19,605	3,280	0.167	97.3%	63.8%
14	Pančevo	43,291	14,086	0.325	136.5%	38,648	8,282	0.214	124.6%	65.9%
15	Pirot	22,401	10,727	0.479	200.8%	17,338	6,288	0.363	210.9%	75.7%
16	Požarevac	26,657	3,562	0.134	56.0%	23,726	2,932	0.124	71.8%	92.5%
17	Prokuplje	15,062	4,560	0.303	127.0%	11,291	2,327	0.206	119.8%	68.1%
18	Smederevo	37,936	12,384	0.326	136.9%	30,794	8,946	0.291	168.9%	89.0%
19	Sombor	32,924	7,715	0.234	98.3%	25,730	4,962	0.193	112.1%	82.3%
20	Srem. Mitrovica	29,718	7,274	0.245	102.7%	25,877	4,301	0.166	96.6%	67.9%
21	Subotica	53,728	16,575	0.308	129.4%	46,593	9,716	0.209	121.2%	67.6%
22	Užice	31,473	11,340	0.360	151.1%	28,011	6,643	0.237	137.9%	65.8%
23	Čačak	42,735	13,049	0.305	128.1%	39,367	9,113	0.231	134.6%	75.8%
24	Šabac	45,384	8,162	0.180	75.4%	38,260	6,512	0.170	99.0%	94.6%

Table 11. Degree of industrialisation of analysed cities in 2002 and 2011

Source: SORS, 2004a; SORS, 2014a

No.	City	Universities		Faculties		Colleges	Total	Population / total
		State	Private	State	Private			
1	Bor	0	0	1	0	0	1	36,850
2	Valjevo	0	0	0	1	1	2	33,692
3	Vranje	0	0	1	0	1	2	28,128
4	Vršac	0	0	0	0	1	1	36,040
5	Zaječar	0	0	0	1	0	1	38,165
6	Zrenjanin	0	0	1	0	1	2	38,256
7	Jagodina	0	0	1	0	0	1	46,152
8	Kikinda	0	0	0	0	1	1	38,065
9	Kraljevo	0	0	1	0	0	1	81,463
10	Kruševac	0	0	0	0	1	1	77,106
11	Leskovac	0	0	1	0	2	3	23,263
12	Loznica	0	0	0	0	0	0	-
13	Novi Pazar	9	1	0	0	0	10	8,110
14	Pančevo	0	0	0	1	0	1	83,818
15	Pirot	0	0	0	0	1	1	44,516
16	Požarevac	0	0	0	0	1	1	44,183
17	Prokuplje	0	0	0	0	1	1	28,522
18	Smederevo	0	0	0	0	0	0	-
19	Sombor	0	0	1	0	0	1	47,623
20	Srem. Mitrovica	0	0	0	0	1	1	52,262
21	Subotica	0	0	2	0	2	4	26,420
22	Užice	0	0	1	0	1	2	30,298
23	Čačak	0	0	1	0	1	2	41,978
24	Šabac	0	0	0	0	2	2	37,370

Table 12. Number of higher education institutions by city, as of August 2021

Source: Commission for Accreditation and Quality Assurance – source: https://www.kapk.org/sr

No.	City	Distance (in km)	Category	No.	City	Distance (in km)	Category
1	Bor	85	6	13.	Novi Pazar	128	6
2	Valjevo	24	3	14.	Pančevo	0	1
3	Vranje	0	1	15.	Pirot	0	1
4	Vršac	65	5	16.	Požarevac	18	2
5	Zaječar	85	6	17.	Prokuplje	21	3
6	Zrenjanin	44	4	18.	Smederevo	12	2
7	Jagodina	0	1	19.	Sombor	52	4
8	Kikinda	77	5	20.	Srem. Mitrovica	0	1
9	Kraljevo	34	3	21.	Subotica	8	2
10	Kruševac	24	3	22.	Užice	63	5
11	Leskovac	9	2	23.	Čačak	0	1
12	Loznica	73	5	24.	Šabac	30	3

Table 13. Categorisation of cities according to their distance from the nearest highway or similar road according to the situation in August 2021

No.	City	Distance (in km)		Category	No.	City	Distance (in km)		Category
1	Bor	BG	26	4	13.	Novi Pazar	ME	29	4
2	Valjevo	BA	33	4	14.	Pančevo	RO	55	2
3	Vranje	MK	23	5	15.	Pirot	BG	22	5
4	Vršac	RO	12	6	16.	Požarevac	RO	25	4
5	Zaječar	BG	22	5	17.	Prokuplje	BG	81	1
6	Zrenjanin	RO	33	4	18.	Smederevo	RO	38	3
7	Jagodina	BG	90	1	19.	Sombor	HR	16	5
8	Kikinda	RO	8	6	20.	Srem. Mitrovica	BA	22	5
9	Kraljevo	BA	92	1	21.	Subotica	HU	8	6
10	Kruševac	BG	86	1	22.	Užice	BA	25	4
11	Leskovac	BG	44	3	23.	Čačak	BA	61	1
12	Loznica	BA	3	6	24.	Šabac	BA	28	4

Table 14. Categorisation of cities according to their distance from the nearest state border. Categories are determined at a 12 km distance, with the last category (No. 6) for a distance of over 60 km from the nearest border.

No.	City	Distance (in km)		Category	No.	City	Distance (in km)		Category
1	Bor	NI	125	6	13.	Novi Pazar	KG	151	6
2	Valjevo	BG	93	5	14.	Pančevo	BG	19	1
3	Vranje	NI	109	5	15.	Pirot	NI	71	4
4	Vršac	BG	86	4	16.	Požarevac	BG	81	4
5	Zaječar	NI	98	5	17.	Prokuplje	NI	29	1
6	Zrenjanin	NS	54	3	18.	Smederevo	BG	48	2
7	Jagodina	KG	52	3	19.	Sombor	NS	93	5
8	Kikinda	NS	108	5	20.	Srem. Mitrovica	NS	53	3
9	Kraljevo	KG	53	3	21.	Subotica	NS	107	5
10	Kruševac	KG	72	4	22.	Užice	KG	111	6
11	Leskovac	NI	44	2	23.	Čačak	KG	54	3
12	Loznica	BG	129	6	24.	Šabac	BG	81	4

Table 15. Categorisation of cities according to their distance from the nearest larger city in Serbia: Belgrade (BG), Novi Sad (NS), Niš (NI) and Kragujevac (KG).

No.	City	The number of dwellings growth			Vacant dwellings						C-D Ratio
		1991-2002 (A)[209]	2011-2002 (B)	Difference C = B/A	2002		2011		2011/2002 (D)		
					Number	In %[210]	Number	In %	Growth	In %	
1	Bor	1,327	286	21.6%	1,411	9.9%	2,503	17.1%	1,092	177.4%	-806
2	Valjevo	4,307	3,481	80.8%	2,878	12.6%	4,420	17.8%	1,542	153.6%	1,939
3	Vranje	2,503	1,897	75.8%	2,189	11.8%	3,006	15.1%	817	137.3%	1,080
4	Vršac	2,003	1,711	85.4%	2,234	15.5%	2,861	18.8%	627	128.1%	1,084
5	Zaječar	1,304	780	59.8%	2,348	15.3%	2,890	18.3%	542	123.1%	238
6	Zrenjanin	3,371	2,297	68.1%	3,252	10.5%	4,791	14.9%	1,539	147.3%	758
7	Jagodina	2,076	4,645	223.7%	1,811	12.9%	4,426	24.8%	2,615	244.4%	2,030
8	Kikinda	1,498	1,221	81.5%	1,919	12.2%	2,441	15.4%	522	127.2%	699
9	Kraljevo	3,897	5,779	148.3%	1,718	7.6%	4,325	15.7%	2,607	251.7%	3,172
10	Kruševac	3,956	4,898	123.8%	1,799	8.8%	4,336	17.9%	2,537	241.0%	2,361
11	Leskovac	3,693	2,615	70.8%	2,240	9.6%	3,723	15.3%	1,483	166.2%	1,132
12	Loznica	3,557	3,512	98.7%	1,301	14.0%	2,618	23.1%	1,317	201.2%	2,195
13	Novi Pazar	3,653	3,690	101.0%	1,037	7.5%	2,529	14.3%	1,492	243.9%	2,198
14	Pančevo	3,918	4,508	115.1%	3,180	9.3%	5,409	14.4%	2,229	170.1%	2,279
15	Pirot	1,672	1,257	75.2%	1,634	11.6%	2,398	15.9%	764	146.8%	493
16	Požarevac	3,025	3,536	116.9%	2,891	17.2%	4,686	23.5%	1,795	162.1%	1,741
17	Prokuplje	1,242	860	69.2%	1,340	13.4%	2,280	21.0%	940	170.1%	-80
18	Smederevo	3,051	3,575	117.2%	2,557	11.0%	4,570	17.6%	2,013	178.7%	1,562
19	Sombor	2,631	2,648	100.6%	1,604	8.4%	2,921	14.6%	1,317	182.1%	1,331
20	Srem. Mitrovica	2,526	2,267	89.7%	1,011	6.6%	2,317	13.7%	1,306	229.2%	961
21	Subotica	3,777	5,463	144.6%	5,030	11.4%	7,635	16.2%	2,605	151.8%	2,858
22	Užice	2,494	2,373	95.1%	1,551	7.5%	3,320	14.0%	1,769	214.1%	604
23	Čačak	3,699	4,871	131.7%	2,092	8.1%	4,544	15.4%	2,452	217.2%	2,419
24	Šabac	5,652	5,033	89.0%	2,514	12.1%	4,817	20.1%	2,303	191.6%	2,730

Table 16. Housing characteristics according to their population density

Source: SORS, 2004b; SORS, 2014c

[209] The period of construction of new apartments.

[210] The given share is the share of unoccupied dwellings in the total number in the urban area.