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DENSITY OF POPULATION AND SPATIAL DISTRIBUTION OF RURAL POPULATION IN THE COASTAL REGION OF MONTENEGRO

ABSTRACT

This paper deals with the issues of the changes in the number and spatial distribution of inhabitants in the coastal area of Montenegro, with special emphasis on the beginning of 21st century, when the demographic transition was already completed in all parts of Montenegro, which means that the population growth rate have been very low or negative, and therefore migration movements were no longer intensive as they were in the second half of the previous century.

Special emphasis was on the hinterland villages that have vastly different demographic development from urban settlements and villages in the coastal part of the coastal region. During the second half of the twentieth and the beginning of the twenty-first century in the area of this region, population was mainly concentrated in the cities or village settlements, in their immediate surroundings and on the coast, while population of the villages in the hinterland became reduced, these villages were settled by old people and they were facing demographic extinction.

Keywords: internal migration, population growth, depopulation, urban growth, spatial distribution-changes.

INTRODUCTION

The Montenegrin coastal zone is a narrow strip (max. 15km wide) bordering the Adriatic Sea, with alternating sedimentary and volcanic rocks and areas of limestone and dolomite. Steep limestone mountains rise rapidly to an average height of 800m. This results locally in strong orographic rain; for instance, Crkvice (940 m.a.s.l.), a village above Kotor Bay, receives 4600 mm per year, one of the highest amounts in Europe.

The coastal zone has recently experienced an intensified tourist industry. Cities such as Ulcinj, Bar, Budva, Kotor, Tivat and Herceg Novi are crowded, and building occurs on the steep hillslopes, which has had an impact on agriculture, the availability of groundwater and the environment in general. The most common type of rural settlements in the Bay of Boka Kotorska are rural settlements with traditional terraces on flysch terrains with brown soil (Curovic and Popovic, 2014). In the northern mountain region of Montenegro, the population grows steadily between 1948 and 1981 but decreased after 1981, with

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18 per cent. The largest population growth between 1948 and 2003 occurred in the central region, with 117 per cent. Particularly, the municipalities Nikšić and Podgorica in the central region experienced a strong growth, at the relative expense of the surrounding municipalities. It is most probable that this urbanisation will further continue, considering the recent population tendencies of the larger cities in Montenegro.

The coastal zone is almost reaching the same growth rate (109 per cent), but this growth occurred mainly in recent times. Most probably, the rural depopulation is not fully represented in the aforementioned data because of the fact that the spatial scale does not allow a representation of the move from rural areas to urban centres within the municipalities. For instance, in the period 1948–1981, the number of inhabitants in the municipal urban centres has grown 4.4-times (Bakic *et al.*, 1994). These urban centres are the governmental centre of every municipality, which also bears the name of the city. These 22 cities also provide some important facilities for the municipality. Besides changes in absolute population numbers, there is a sectoral shift in employment: in 1981, only 5.3 per cent of the Montenegrin population was active in the agricultural sector, whereas this was 75.4 per cent in 1948 (Nyssen *et al.*, 2014; Spalevic *et al.*, 2014).

The prime objective of the paper is to provide a new data on for assessing the population growth and spatial distribution of rural population in the coastal region of Montenegro. The second objective is to provide a decision support tool for coastal resource managers in the assessment of socio-economic impacts of development in coastal areas of Mediterranean.

MATERIAL AND METHODS

The coastal region covers an area of 1591 km², covering 11.5% of the territory of Montenegro. It is a complete natural entity in terms of geomorphology and climate. From the estuary of Bojana to the Boka Bay it includes the territories of the municipalities of Ulcinj, Bar, Budva, Kotor, Tivat and Herceg Novi (Figure 1).

Most of the study area is hilly-mountainous terrain, consisting mainly of Eocene flysch sediments in the lower and the central zone and of Triassic and Jurassic limestone, with plenty of detritus and traces of hornstones and other silicate ingredients in the central and higher zones (Spalevic *et al.*, 2012).

From the other parts of Montenegro it is separated by the coastal mountains: Orjen, 1894 m.a.s.l.; Lovcen, 1749 m.a.s.l.; Sutorman, 1185 m.a.s.l. and Rumija, 1894 m.a.s.l. (Bakic and Mijanovic, 2008: 150). In the first half of the twentieth century (1948) in the area of this region lived 69 809 people, it was the smallest populated region of Montenegro with 18.5% of the population.

The main occupation of the population was extensive agriculture, fishery and industry and marine to a lesser extent. The tourism in the first half of the twentieth century was modestly developed and therefore had no significant part in the national income of the region. This region was in the worst economic position in Montenegro.



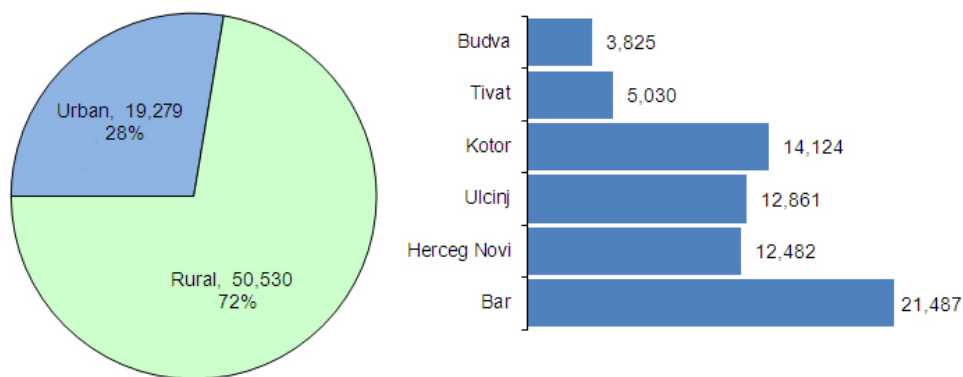
Figure 1. Coastal area of Montenegro with the position of the Municipalities of Herceg Novi, Tivat, Kotor, Budva, Bar and Ulcinj

All standard demographic methods needed to work with statistical materials on population at national, regional and local levels were used; this includes all the demographic techniques most relevant to the work of demographers, geographers and sociologists working with population statistics.

All the available literature about the studied area related to the demographic concepts and practical strategies were studied; important for the interpretation of population statistics, including computer-based approach (run in Microsoft Excel) to the visualization of demographic concepts and data.

RESULTS AND DISCUSSION

From the total number of inhabitants of the region, 50530 were from the rural areas, that is 72.4%. The largest share of the rural population had the municipality of Bar with 87.9%, and then the municipalities of Kotor 73.3%, Budva 72.4%, Ulcinj 65.9%, Herceg Novi 64.5% and the smallest share had the municipality of Ulcinj with 40%.



Graph 1 The number of inhabitants of the region, urban and rural settlements in the region and the municipalities in 1948

In the rural settlements on the coast in 1948, lived 36.4%, while in the settlements in the hinterland lived 63.6% of rural population of the region. Only the municipality of Tivat has a high share of the population in the rural settlements on the coast - 72.2%, but it is understandable because out of the 10 villages of the municipality only 2 are in the hinterland.

The lowest participation of population in rural settlements on the coast had the municipality of Ulcinj with 14.6%. In other municipalities, participation ranged from 25 to 55%. It should be noted that in this period in the coastal region there were 215 villages, of which 71 were on the coast and 144 in the hinterland. The villages in the hinterland had a high number of population and they comprised 46% of the population of the coastal region and they constituted the basic base for the reproduction of the population.

The population density of the region was 43.9 inhabitants per km². Each municipality in this period had the population density which was higher than average in Montenegro, and which amounted to 27.3 inhabitants per km². Population density of urban settlements amounted to 226 inhabitants per km², rural settlements on the coast 46 inhabitants per km², and rural settlements in the hinterland - 29 inhabitants per km².

A little of arable land, land fragmentation, mainly poor solvency of land have caused extensive type of agriculture that is based on farming, fruit growing and livestock that dominated in the villages in the hinterland. In these conditions, economic development has been slow, and emigration was inevitable especially in villages that, as a rule, had higher birth rates than urban settlements. Migration had two directions: towards the urban areas of the region in which industry began to develop or towards country borders.

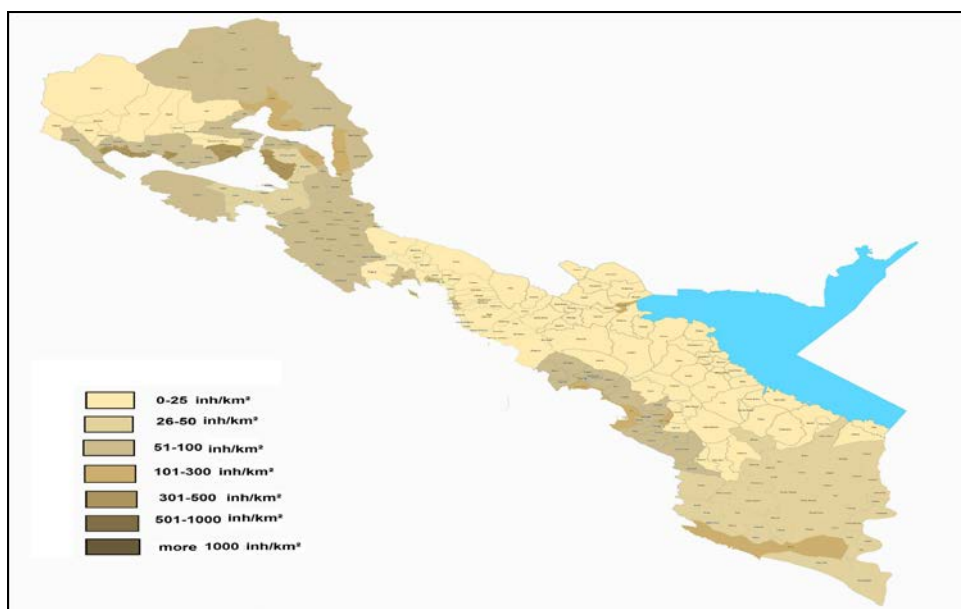


Figure 2. Density of population in the coastal region in 1948

Changes in the number of the population and its spatial distribution in the second half of the twentieth century

In the second half of the twentieth century, there was a significant population growth in the coastal region, in the period from 1948 to 1991, growth index was 180.9. As a result of such an movement, the participation of the region in the Montenegrin population was increased to 21.3%.

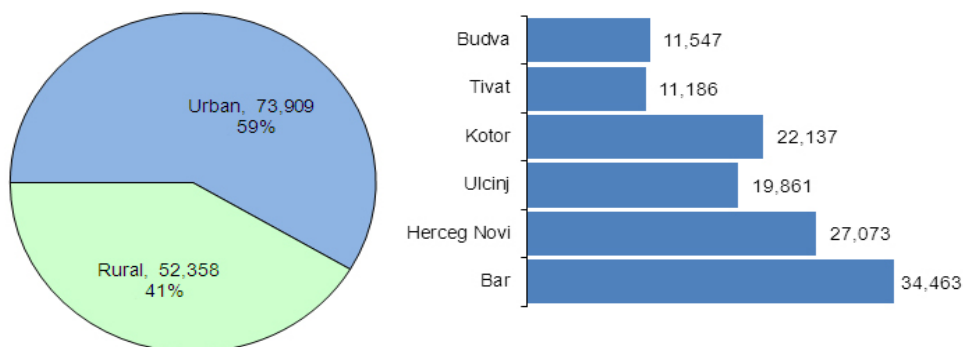
A significant increase in the index is conditioned by the development of tourism, which has accelerated the economic development of the coastal region, so in the 80s of the last century, it was immigrationally the most attractive area in Montenegro. Normally, the cities were more attractive to immigrants, and they are the ones that were in this period significantly increased in population, as it is indicated by the high indexes of the population growth in the cities that accounted to 383,4. It should be noted that this region in the period from the mid 60's to 90's of the last century had the smallest population growth rate in Montenegro, which ranged around 8.3 ‰ (R. Bakic, D. Mijanovic 2008: 230), and therefore it had the smallest natural replacement of the population, and the largest share in the growth of the population had a migrant population, as it is illustrated by the fact that in the period from 1961-1981 in this region the population had increased to 57 165, of which it was increased by immigration for 34 448 (at an annual rate of migration balance of 0.9%) and by the population growth it was increased for 22 717 (R. Bakic, D. Mijanovic 2008: 32).

Each municipality had a population growth but of varying intensity. On one side were the municipality of Ulcinj, Kotor and Bar with moderate

population growth, on the other Herceg Novi, Tivat and Budva with an extremely high rate of population growth (index 301.9). Growth index of the rural population was only 103.6, the result of population growth in the settlements on the coast, while the hinterland settlements faced with population decline (Table 1). In the hinterland of the Montenegrin coast, the inadequate treatment of these settlements is also evident, along with the conversion of agricultural land into construction land, depopulation and decay (Šarović 2014),

The decline in the number of rural population has initiated the process of population fragmentation of villages, so in contrast to previous periods, when the villages of the size 101-200 residents were prevalent, in the 90s they became the dominant villages of smaller size of less than 100 inhabitants.

Along with the population growth other transformations in the demographic development of the region took place. The share of rural population has dropped to 41.5%, so a level of urbanization from 1948 to 1991 was increased by 212%².



Graph 2 The number of the inhabitants of the regions, urban and rural settlements in the region and the municipality in 1991

Due to constant growth in the number of population, population density in the region had increased to 79.4 inhabitants per km², in urban areas to 867

² In all municipalities, there was a large increase in the degree of urbanization, which was the smallest in Tivat i.e. for 129.7% (from 60% to 77.8%) because this municipality in 1948 had the highest level of urbanization in Montenegro. Very high growth level of urbanization had the municipalities of: Bar 342.1%, although in it the level of urbanization is the lowest and it accounts for 41.4%, despite the highest growth, Budva for 301.8%, from 27.6% to 83.3 % and despite this transformation from rural to urban population it has the highest level of urbanization not only in the region but also in Montenegro. Other municipalities in the region had also had high growth of urbanization for these two periods: Kotor for 207.1%, Herceg Novi for 198% and Ulcinj to 148.1%. With a very high index of growth, the following urban settlements were distinguished: Sutomore and Bar in the municipality of Bar, Budva and Petrovac na Moru in the municipality of Budva, Bijela Igalo and Hreceg Novi in the municipality of Herceg Novi and Dobrota in the municipality of Kotor. It is interesting that Becici is the only urban settlement which in this period had a decrease in population.

inhabitants per km². In the villages on the coast population density increased to 75 inhabitants per km², while in villages in the hinterland it fell to 20 inhabitants per km², which indicates the intense process of depopulation of villages in the hinterland which is caused by neglect and deterioration of the core business of the area of agricultural production. In addition to this basic, push factors for leaving the village were the poor transport infrastructure, poor utilities in villages, lack of educational and cultural institutions etc. Practically village had offered almost nothing, and on the other hand towns and economically richer areas provided numerous opportunities for advancement of individuals.

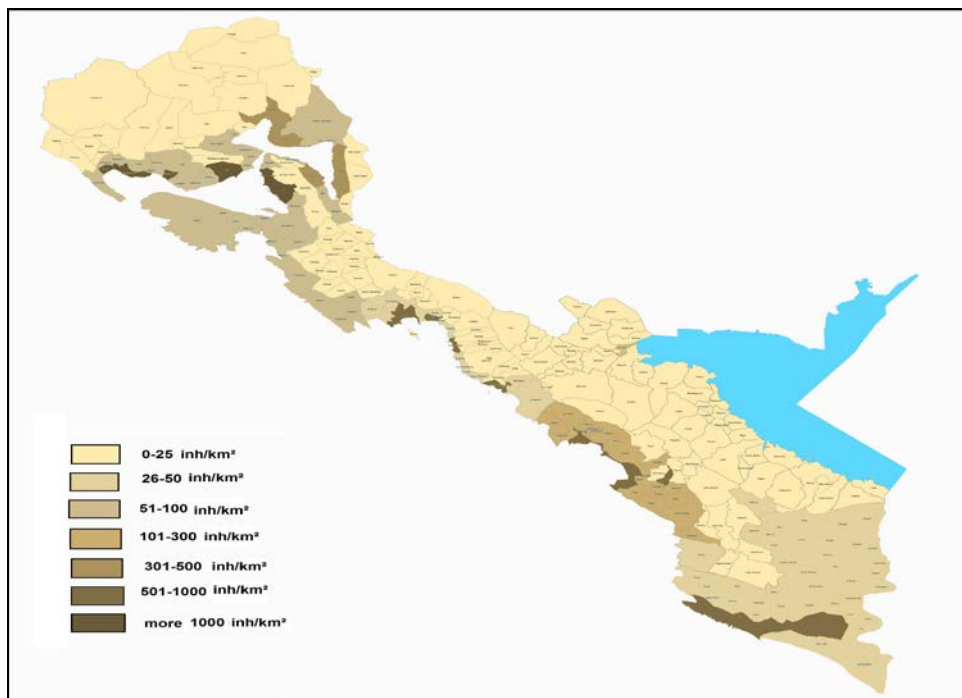
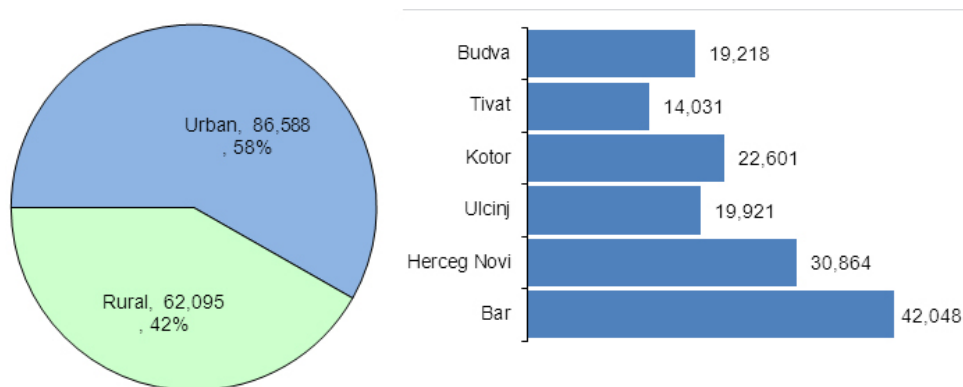


Figure 3. Density of population in the coastal municipalities in 1991

Changes in the number of the population and its spatial distribution at the beginning of XXI century

The characteristic of movement of population in the coastal region at the beginning of the XXI century is continued growth, but with a much smaller intensity from the previous periods. This is especially notable in the last intercensal period from 2003-2011 when the index was only 102.6. In the period from 1991 to 2003 the population growth significantly influenced somewhat higher rate of immigration from the area of former Yugoslav republics, which was caused by the disintegration of the state and by the war, which had compensated lower population growth with natural increase and with slightly lower immigration from Montenegro. For all municipalities in the region this period is characterized by much lower growth index than in the period from

1961-1991. The much lower population growth in the coastal region in the period from 2003-2011 resulted from, primarily lower rates of natural increase, which in the period 2003-2011³ were very low and ranged from 0.05 ‰ in Kotor to 2.9 ‰ in Bar. So, thanks to population growth in the period between the last two census periods, this region got 2 593 inhabitants, additional 1 265 inhabitants this region has got by immigration. The largest influx of population had the municipality of Budva 2 364, then Bar 1 418, significantly less Tivat 301, while the other three municipalities had negative net migration, which caused a decline in the number of population in the last intercensal period in them. The largest outflow of the population had the municipality of Herceg Novi - 2 214, then Ulcinj - 447 and Kotor - 157. Small influx of population indicates calming of the interior, and at the same time strengthening of the external migrations out from Montenegro. The reason for emigration is, of course, the economic crisis, that has significantly affected the dominant economic activity of this region and on its tourism economy. To this should be added the fact that a number of temporary resident population during the war from the former Yugoslav republics returned to their home state, which further increased emigration in some municipalities in the region.



Graph 3 The number of inhabitants of the regions, urban and rural settlements in the region and the municipalities in 2011

Despite the lower indexes of population growth in the region at the beginning of XXI century, its share in the population of Montenegro was grown to 23.9% in 2011. Considering the population of the region, the municipality of Bar in the entire observed period had the largest share, and the largest increase in share had the municipality of Budva from 5.5% in 1948 to 12.8% in 2011. For the municipalities of Kotor and Ulcinj, a continuous decline in the share of the population in the region from 60s of the last century is characteristic, and for the municipality of Tivat growth is characteristic, while the municipality of Herceg Novi had increase in share to 2003 and then decline.

³ In the municipality of Budva natural growth rate was of a moderate character (7,1‰).

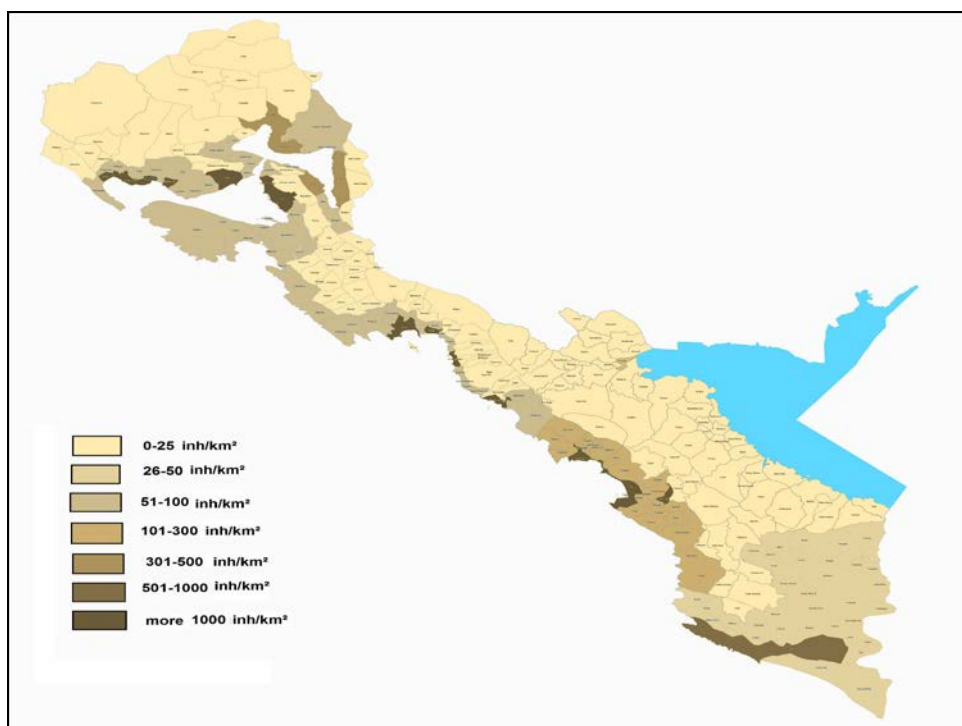


Figure 4 Population density of the coastal municipalities in 2011

In 2003, the smallest share of the rural population in the region is recorded - 40.2%, but in 2011 it slightly increased to 41.8%, but the present was disproportion in spatial distribution of the rural population. While in the villages on the coast significant population growth was recorded, in the villages in hinterland the number of inhabitants further dropped and in them there were only 29.8% of the rural population of the region.

Along with the increase in the number of rural declined the number of urban population (index 99.7) in the region as a result of population decline in: Bar, Virpazar, Petrovac, Sveti Stefan, Bijela, Herceg Novi, Igalo, Zelenika, Kotor, Perast, Prčanj, Risan and Tivat. From urban settlements the largest decline in population had Kotor (index 73.2).

The population density of the coastal region increased and at the beginning of this century it is 94.1 inhabitants per km² and it is the largest in Montenegro. Municipality of Tivat with 306.8 inhabitants per km² is the most densely populated municipality of the region and the state, high population density also had the municipality of Budva with 157.1 inhabitants per km² and Herceg Novi with 131.9 inhabitants per km². The decline in population density also had the municipality of Ulcinj and Kotor.

Regardless of the decline in population in certain urban areas of the region, population density in urban areas increased to 1,016 inhabitants per km². In the villages on the coast population density increased to 109 inhabitants per km², while in villages in the hinterland it fell to 17 inhabitants per km².

Table 1. Changes in the number of inhabitants
in coastal regions and municipalities in the period from 1948-2011

Settlement	1948	1991	index 91/61	2011	index 11/91
urban settlements	2609	14274	547,1	17649	123,6
rural settlements on the coast	4778	11425	239,1	17758	155,4
rural settlements in the hinterland	14100	8764	62,2	6641	75,8
rural settlements	18878	20189	106,9	24399	120,9
THE MUNICIPALITY OF BAR	21487	34463	160,4	42048	122,0
urban settlements	1056	9622	911,2	15995	166,2
rural settlements on the coast	1305	1707	130,8	2890	169,3
rural settlements in the hinterland	1464	218	14,9	333	152,8
rural settlements	2769	1925	69,5	3223	167,4
THE MUNICIPALITY OF BUDVA	3825	11547	301,9	19218	166,4
urban settlements	4434	19041	429,4	19536	102,6
rural settlements on the coast	4439	6361	143,3	10553	165,9
rural settlements in the hinterland	3609	1671	46,3	775	46,4
rural settlements	8048	8032	99,8	11328	141,0
THE MUNICIPALITY OF HERCEG NOVI	12482	27073	216,9	30864	114,0
urban settlements	3777	12244	324,2	12583	102,8
rural settlements on the coast	5172	6257	121,0	5931	94,8
rural settlements in the hinterland	5175	3636	70,3	4087	112,4
rural settlements	10347	9893	95,6	10018	101,3
THE MUNICIPALITY OF KOTOR	14124	22137	156,7	22601	102,1
urban settlements	3018	8703	288,4	10118	116,3
rural settlements on the coast	1452	2381	164,0	3854	161,9
rural settlements in the hinterland	560	102	18,2	59	57,8
rural settlements	2012	2483	123,4	3913	157,6
THE MUNICIPALITY OF TIVAT	5030	11186	222,4	14031	125,4
urban settlements	4385	10025	228,6	10707	106,8
rural settlements on the coast	1237	1812	146,5	2615	144,3
rural settlements in the hinterland	7239	8024	110,8	6599	82,2
rural settlements	8476	9836	116,0	9214	93,7
THE MUNICIPALITY OF ULCINJ	12861	19861	154,4	19921	100,3
urban settlements	19279	73909	383,4	86588	117,2
rural settlements on the coast	18383	29943	162,9	43601	145,6
rural settlements in the hinterland	32147	22415	69,7	18494	82,5
rural settlements	50530	52358	103,6	62095	118,6
COASTAL REGION	69809	126267	180,9	148683	117,8

Source: MONSTAT Statistical Bureau (2005). Comparative view of the number of population 1948, 1953, 1961, 1971, 1981, 1991, and 2003 - data by settlements, Podgorica. MONSTAT- Bureau of Statistics (2011) Tables list: Table O4 age and sex.

In the observed period there have been major changes in the number of the population and its spatial distribution in the coastal regions and municipalities in particular, who have had different effects in rural and urban areas. As we can see from the above exposed, although the number of rural population in the region was increasing, its share in the total population of the region was declining until 2011, when it re-recording a small increase. However, in relation to 1948, the share of the rural population in 2011 declined for 30.5%. A bigger problem is the spatial distribution of the population in rural areas of the region. Apart from 17 settlements, who were in 2011 in these regions without inhabitants, in 77 villages on the coast lived 29.1%, and 165 villages in the hinterland 14.1% of the population of the region. In the municipality of Bar in 17 villages on the coast lived 41.9%, and in 62 villages in the hinterland 15.7% of the population, in the municipality of Budva in 18 villages on the coast lived 15.1%, and in 23 villages in the hinterland only 1.7% of the population of the municipality. In the municipality of Kotor on the coast in 13 villages lived 29.3%, and in the hinterland in 38 settlements 20.2% of the population, while in the Tivat in 8 villages on the coast lived 27.3%, and in the remaining two settlements in the hinterland lived 0.4% of the total population of the municipality. In the municipality of Herceg Novi on the coast in 15 settlements lived 34%, and in 8 settlements in the hinterland 2.5% of the population of this municipality. The municipality of Ulcinj is the only in the region where the majority of the rural population lived in the hinterland, so in 6 settlements on the coast lived 11.5%, and in 32 settlements in the hinterland 40.4% of the population of the municipality.

Population size of the village was also changed, the average size of villages in the region increased from 230 to 259 people, but while it was increased in the villages on the coast to 566, in the villages in hinterland it was reduced to 112 inhabitants, which suggests rather advanced process of depopulation of villages that have been away from the coast and city centres and which were mainly oriented to subsistence farming as the primary activity. The number of villages with the lowest number of population was increased (0-25) from 8 in 1948 to 78 in 2011, while the number of villages the of medium-sized population (101-200, 201-300 and 301-500 inhabitants) decreased from 147 to 82, The number of villages with large and largest population size (501-1000 and over 1 000 inhabitants) increased from 18 to 35.

From the municipalities of the region, the biggest average country had the municipality of Herceg Novi-495 inhabitants and the smallest the municipality of Budva-79 inhabitants. The biggest difference in population size of coastal villages and those in the hinterland had the municipality of Bar, where the coastal villages sized 1 045 inhabitants, while those in the hinterland had 107 inhabitants. In other municipalities are large differences in the average size of coastal and hinterland villages. In Budva coastal villages have the 161, and those in the hinterland of only 14 people, in Kotor coastal villages had 456 and hinterland villages 108 inhabitants, in Tivat average village on the coast had 482,

and in the hinterland 30 inhabitants, in Herceg Novi - the village on the coast had 704, and village in the hinterland 97 residents. Municipality of Ulcinj had the most favourable relationship between the coastal villages of the size of 436 and the villages in the hinterland of the size of 206 people that means that this municipality has the biggest average village in the hinterland.

Demographic population erosion in the hinterland villages of this region is caused by socio-economic changes in which the dominant role had the development of tourism, to a much lesser extent industry, where they focused all material investments in the region. Since the tourist and industrial capacities were mainly connected to urban and coastal areas, and on the other hand investment in agriculture and villages of hinterland was negligible, as a logical consequence, migrations from the hinterland to coastal and urban areas usually occurred, or there were migrations outside the state in search for a better life. Outcomes of this study confirm the findings of the other authors about the other Mediterranean areas, but also the other regions with the different climate and physical geographical conditions.

For example, for the same period Spain faced a strong increase in population and a great change in urban structures due to the fast demographic growth, concentrating the population in towns larger than 10000 inhabitants. Economic reasons made this possible: that is to say, an economic policy that rewarded growth against weak territorial planning.

This provoked a strong rural exodus and intense internal migration movements basically aimed towards the urban centers of the best industrialized and developed areas. In this way the regional differences increase leading to great difficulties to reach a suitable balanced organization of the territory in the future (Maria Serrano, 1998).

The Alps, earlier recognized as a rural region, being populated by peasants, at the present time changed and the tourism now plays a major role there. For this region Bätzing *et al* (1996) concluded that the structural change relates to ecological, social, cultural, and economic matters, where the region-specific mountain policies should be introduced.

CONCLUSIONS

Today, most of the villages in the hinterland is burdened, not only with understaffing and mainly very old population without reproductive base for demographic renewal, but also with a number of other problems such as: unfavourable conditions of urban living, non-performing infrastructure systems, little economic power. Therefore, the question that arises is how, in today's conditions of life, we could revitalize and demographically rejuvenate hinterland villages. So far, in the planning concept in the coastal region, and indeed in the whole country, the concept of a network of rural settlements with central functions is represented, that is basing on the villages with the so-called local centres, for which would be invested with a priority to create urban living conditions and that would be leaders of the development of the wider area, because these

settlement will "accelerate the fading and disappearing of other villages, for which it is irrational to invest large funds, particularly in their maintenance" (R. Bakic, D. Mijanovic 2008: 53), but almost none of this concept has not happened in practice, at least when it comes to settlements of the hinterland coastal region.

In urban areas also occurred many changes in this period (1948-2011). Urban population of the region increased for 451%. In addition, positive changes have taken place in the age structure, especially in cities that have greater influx of immigrated population, thus the basis for reproduction was preserved. Positive changes have occurred in the educational and economic structure. Thanks to population increase, cities became urban and with good infrastructure, which provided better living conditions for the population. Along with that in addition to basic tourist, other functions of the cities have been developed, such as administrative, educational, health and others.

Uncontrollably migration to the cities had and still has a lot of negative effects on cities and their surroundings, of which the most important are: illegal and unplanned construction of buildings, enormous pressures on infrastructural systems, housing, social services, educational and medical institutions, a growing problem of unemployment, which is particularly evident in recent years in some municipalities, the emergence of so-called rings of urbanization which, among other, causes environmental issues. Population growth in cities has inevitably led to their spatial expansion, thereby destroying arable land in the region in which it otherwise lacks. In addition, suburban villages have grown together with the cities which led to the creation of a number of settlements along the coast and to forming of agglomerations, which is partly caused by the lack of detailed urban plans and urban projects in the region, and partly because of our disobeying of them.

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