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Review article

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THE AGE STRUCTURE OF THE POPULATION IN THE EASTERN REGION OF THE REPUBLIC OF MACEDONIA IN ASPECT OF SPATIAL PLANNING

Abstract: The social trends in the country reflected the demographic conditions in the East region. The continued decline in fertility rate, together with the expected extended life span and in collaboration with migration movements, conditioned reduction of population and restructuring in the age structure. Based on a certain indicators that are elaborated in this paper, it is evident that in a period of fifty years we have a disruption in the balance between generation and emphasized passage of the population in the region to a higher stage of demographic aging. The aging of the population requires and directs activities related to economic and social activities, the use of resources and the organization of space and is a direct prerequisite for sustainable socioeconomic and spatial development.

Key words: population, age structure, spatial development

Извод: Друштвени токови у држави имали су свој одраз на демографску ситуацију Источног региона. Континуирано опадање стопе фертилитета, заједно са очекиваним продуженим трајањем живота у комбинацији са миграцијским кретањима изазвали су смањивање броја популације и измену старосне структуре. На основу појединих индикатора, који су разрађени у раду, очигледно је да у периоду од педесет година имамо озбиљно нарушавање рамнотеже међу генерацијама и наглашени прелаз становништва на већем степену демографске старости. Старење становништва захтева и усмерава економске и друштвене активности, коришћење ресурса, организацију простора и директан је предуслов за одржљиви друштвено-економски и просторни развој.

Кључне речи: становништво, старосна структура, просторни развој

Area of research

The East Region is located in the extreme east part of the Republic of Macedonia. It is mainly a mountainous region and spreads along the Bregalnica River, over the basins of Shtip, Maleshevo and Pijanec and the field of Kochani. The region comprises 14.2% of the total area of the Republic of Macedonia. In

this region there are 217 settlements (eight have a status of a city: Berovo, Delchevo, Pehchevo, Vinica, Kochani, Probishtip, Makedonska Kamenica and Shtip¹), allocated in eleven municipalities: Berovo, Delchevo, Pehchevo, Vinica, Kochani, Probishtip, Shtip, Zrnovci, Karbinci, Makedonska Kamenica and Cheshinovo-Obleshevo According to the evaluations of the population for 2012, this area was populated with 178.814 inhabitants or 50.6 inhabitants/km², which is a density below the national average².

The nature, geography, climate and hydrological characteristics give the potential for production of rice (especially in the Kochani Field), and the areas of Pijanec and Maleshevo are favorable for growing fruits and vegetables.

The region has developed lead and zinc mining industry and textile industry. Also the region has great potential for development of winter and alternative tourism.

Methodology of work and data sources

As indicators of the demographic age taken into account are the average age of the population, the participation of the three age groups in the total population and the index of ageing. In this manner, the age structure expressed through the seven stages of ageing (according to Penev, 1995) synthesizes all the demographic movements as fertility and mortality, natural movement and migrations that are pointers for the qualitative changes in the population.

Table 1: Stadiums of demographic age and criteria for their determination (Penev, 1995)

	<i>Stages of demographic ageing</i>	<i>Average age (year)</i>	<i>Young population (0-19) in %</i>	<i>Young and mature population (0-39) in %</i>	<i>The older population (60+) in %</i>	<i>Index of ageing (4/2)</i>
1	Early demographic youth	0-20	58+	85+	0-4	0-0,07
2	Demographic youth	20-25	50-58	75-85	4-7	0,07-0,14
3	Demographic maturity	25-30	40-50	65-75	7-11	0,14-0,28
4	Threshold of demographic old age	30-35	30-40	58-65	11-15	0,28-0,50
5	Demographic ageing	35-40	24-30	52-58	15-20	0,50-0,83
6	Deep demographic old age	40-43	20-24	45-52	20-25	0,83-1,25
7	Deepest demographic old age	43+	0-20	0-45	25+	1,25+

¹ Stojmilov A. (2005): Socioeconomic geography of the Republic of Macedonia, Faculty for Natural Sciences and Mathematics, Skopje (in Macedonian)

² Regions of the Republic of Macedonia, 2013; www.stat.gov.mk

The villages are examined in the frames of the eastern mountainous region, according to NUTS 3 classification and by municipalities according to the NUTS 4. For all of the 145 village settlements statistical data from the three censuses in 1961, 1994 and 2002 are used. For 2012, the assessments of the population of the corresponding region are used.

Discussion and results

The general geographical features of the area which encompasses the East region, together with the socio-historical and economic conditions, largely determined the direction of population growth. The region in demographic terms is characterized by heterogeneity, and it is occupied by serious demographic problems. Changes in the number of the population and its structure are under the direct influence of natural movement and migration. The components of the natural movement of the population follow the general trends inherent to the population of the entire state, with emphasized negative changes that reflect not only at the demography, but also on the common socioeconomic situation in the region.

The declining trend in the number of live births that is present in the last year is shown also in the overall birth rate, which reached up to 9.3‰ in 2012. Seen by municipalities, the municipality Karbinci has the highest value with 16.1‰, and the municipality Pehchevo with the lowest value of 5.1‰. Considering the serious changes in the age structure of the population, the overall mortality rate tends to increase in some municipalities with values much higher than the national average (Karbinci 15.8 ‰). The decline in the number of births, in conditions of relatively high value of mortality contributed serious reduction in natural increase that from 2006 onwards has negative value. Namely, except the municipalities Vinica, Karbinci and Makedonska Kamenica, all other according to the latest data show a negative natural increase, with a maximum value of -8.6 ‰ in the municipality of Pehchevo. In the period 1994-2002, the birth rate was less than five thousand people, but nowadays that number continuously declines. The unfavorable situation in terms of population biodynamic is confirmed by the value of the total fertility rate, which records a serious decline and since 2006, onwards has a value of 1.3 live births per thousand women, which indicates that the low reproduction of the population will continue to represent a serious problem in the future.

The region is characterized by intensive migration movements that directly reflected the demographic state. In the second half of the twentieth century, many of the young working population in the reproductive age have moved to major urban centers in the region, have left the region and settled in other parts of the country or went abroad. In the period 1994-2002, the region noticed the migration balance of -3021 persons. Due to the low economic

development, high unemployment, limited opportunities of acquiring education, etc., emigration of the population has not stopped in these recent years, so they modified the demographic state of the area, seriously affect the demogeographical structure and the future trends of the natural movement of the population. For illustration, we'll note the period 2002-2012, when compared to internal migration, the balance accounted -1.343 people, while within the Republic of Macedonia, 4292 people moved away, and 2949 people from other regions have moved here. In terms of external migrations, the number of people who have left the country is higher, in the period 2002-2012, 1228 people left the region, while the number of immigrants was 803 or the migration balance are -425 people. In terms of population mobility, mainly the young working population is more numerous. In the period 2002-2012, 76.2% of the people who have moved away from the region within the Republic of Macedonia were aged 20-40 years, and in terms of gender structure, females were outnumbered and they represented 75.9%. In the number of emigration abroad, more numerous are the male population who participated in more than 60%.

Table 2: Vital indicators for the population in the Northeast region, 1998-2012

Year	Per 1.000 inhabitants		
	Live births	Deaths	Natural increase
1998	11.4	8.8	2.6
2000	11.0	8.8	2.2
2002	10,2	9.1	1.1
2004	9.7	9.5	0.2
2006	9.3	10.0	-0.8
2008	9.2	10.2	-0.9
2010	9.9	10.1	-0.2
2012	9.3	10.8	-1.6

Source: SSO in Republic of Macedonia

The presented situation has strong repercussions on the future development of the East Region. The reduced volume of births also means a weakening of the functional contingents as primarily the fertility contingent, active population, labor force, etc.

At the same time all the states listed, as biodynamic, the reproductive behavior of the population and the geographical mobility clearly reflected the characteristics of the age structure of the population in the analyzed region.

According to the values of the selected indicators of population in the Eastern region onto the stage of demographic youth in 1961, through the stage

of demographic age in 1994, the stage of deep demographic age in 2002 and retained in it in the next analyzed year.

The constitution that the population transferred from a lower to a higher stage of demographic ageing, confirms the development of the aging process, which is a fundamental characteristic of changing age structure of the population in the East region in the period from 1961 - 2012 year.

The same motion of the process of demographic aging is perceived among municipalities in the region. In 1961, seven municipalities out of the total number of eleven municipalities are in the stage of demographic youth, four municipalities are in the stage of demographic maturity (Berovo, Pehchevo, Probishtip and Shtip).

In addition, out of the total number of 217 settlements, 92 are in a stage of demographic youth and 85 are in a stage of demographic maturity. In the next analyzed year, determines the largest increase and shift towards higher stages of demographic age, in the municipality Delchevo transition even of 4 stages – from the stage of the demographic youth to the stage of deep demographic old age. Out of the total number of settlements, 124 can be placed in the group of three highest demographic age groups and 16 settlements have been displaced.

Table 3: Indicators of the demographic ageing in the East region, 1961, 1994, 2002, 2012

Municipalities	1961	1994	2002	2012
Berovo	3	5	6	6
Vinica	2	4	5	5
Delchevo	2	6	6	6
Zrnovci	2	5	5	6
Karbinci	2	4	4	5
Kochani	2	5	5	6
Makedonska Kamenica	2	4	5	5
Pehchevo	3	6	6	6
Probishtip	3	6	7	6
Obleshevo-Cheshinovo	2	5	6	6
Shtip	3	5	5	6
Total East region	2	5	5	6

Source: *Own calculation according data from the SSO in Republic of Macedonia by settlements*

In 2002, some of the municipalities remain in the same stage as in 1994, but some of them moved to a higher stage, where the population in Probishtip reaches the highest stage - stage of deepest demographic old age. The younger population, i.e. the population that belongs to the stage of early demographic

youth and the settlements in the stage of demographic youth mainly belongs to the municipality of Karbinci. In these settlements, population of Turkish nationality is present where the higher fertility rate is still present. The same situation can be seen in the settlements included in the demographic stage of maturity where the participation of the Roma population is noted. In 2012 except the municipalities Vinica, Makedonska Kamenica and Cheshinovo-Obleshevo, in all other municipalities, transition to a higher stage of ageing is shown. With relatively favorable indicators of the age structure are characterized the municipality Karbinci and the municipality Makedonska Kamenica that is mostly due to a tradition of large families. On the other hand, profound indicators of aging can be noted (especially in the municipalities Berovo, Delchevo, Pehchevo, Probishtip and Cheshinovo-Obleshevo) where the average age of the population is over 40 years, and the share of young people up to 19 years is under 20% of the total number of the population. In terms of the current indicators for the natural and mechanical dynamics of the population, with features of the regressive type of population, it is inevitable to expect further depletion of the population in the region. It will surely appreciable effect on the volume of the employment contingent and at the opportunities for spatial economic development. In fact, by the year 2017 and 2022 (in circumstances where only demographic factors are taken into account for calculations), for every 100 people out of the working contingent, influx of 62 or 60 people in the working contingent is expected. This situation with an increased outflow of people from the labor contingent, can a serious problem with the intent for optimal use of space possibilities and natural resources of the region, as well as for the commitment of an investment and economic development, especially in the primary and secondary sector. Knowing that the region is characterized by industry that according to its characteristics is very labor intensive, and having in mind the efforts to develop rural and alternative tourism are achievable only by involving a relatively young working population, more than evident is that the lack of adequate labor force would affect the economic trends in the region. Also, the overall spatial planning needs in terms of housing facilities and the societal standard, facilities for the younger population as kindergartens, schools, facilities for sports and recreation, facilities for the older population, etc., are attached to the knowledge of the age characteristics of the current population. The estimates of the population from the period of 2006 to 2012, indicate to a continuing decrease in the share of the population under 14 years (from 16.3% to 14.7%), while increasing in the share of the elderly people (11.9% to 13.2%). By doing this, the needs of proper dimensioning and functional definition of space for all age groups of people can be defined. At the same time, data and analysis related to the age structure of the population represent a tool that could help the relevant institutions in defining and evaluating of the purposes of the programs of population aging and the elderly population, as well as to raise public awareness about this issue.

Conclusion

The age structure of the population is the basics for the definition of all segments in spatial planning. It represents an indication for consideration of future needs for space, jobs, housing facilities, satisfying the primary service needs of the population, etc. Because the East region of the Republic of Macedonia, studied in this paper, is seriously affected by the process of demographic aging and in this context, the general fertility rate, which since 2006 onwards has a value of 1.3 live births per thousand women, also indicates to the insufficient reproduction of the population. The problem along with prominent migration trends in the past few decades have contributed to disturbance in the correlation between age groups. The weakening of labor contingent and young reproductive population, as well as the gradual increase in the number of persons belonging to higher age groups resulted in the passage of the region to a higher stage of demographic old age. According to the values of the selected indicators of population in the Eastern region onto the stage of demographic youth in 1961, through the stage of demographic age in 1994, the stage of deep demographic age in 2002 and retained in it in the next analyzed year. The constitution that the population transferred from a lower to a higher stage of demographic ageing, confirms the development of the aging process, which is a fundamental characteristic of changing age structure of the population in the East region in the period from 1961 - 2012 year. The situation is different if we separately consider each of the municipalities, some of which have reached the highest stage, the stage of profound demographic old age. It will surely appreciable effect on the volume of the employment contingent and at the opportunities for spatial economic development, development of certain economic branches, but also, in a way determines the direction of future activities, their location depending on the age structure and the needs of the population. In that context, serious changes in the network of settlements, in their demographic, functional development and physiognomy can be expected.

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СТАРΟΣНА СТРУКТУРА СТАНОВНИШТВА У ИСТОЧНОМ РЕГИОНУ МАКЕДОНИЈЕ ИЗ АСПЕКТА ПРОСТОРНОГ ПЛАНИРАЊА

Закључак

Старосна структура становништва је основа за дефинисање свих сегмената у просторном планирању. Она представља индикацију за разматрање будућих потреба за простором, запослењем, стамбеним објектима, задовољењем примарних потреба становништва, итд. Због чињенице да је источни регион Републике Македоније, који се анализира у овом раду, озбиљно погођен процесом демографског старења и у том контексту, општа стопа фертилитета, која од 2006. године има вредност од 1,3 живорођених на хиљаду жена, такође указује на недовољну репродукцију становништва. Овај проблем, заједно са истакнутим миграционим трендовима у последњих неколико деценија, допринео је поремећају у корелацији између старосних група. Опадање радно способне популације и младог репродуктивног становништва, као и постепено повећање броја припадника старијих старосних група резултирало је преласком региона у вишу фазу демографске старости. Према вредностима изабраних показатеља становништва у источној регији почев од демографски младих у 1961, кроз фазу демографске старости у 1994, фазе дубоке демографске старости у 2002. која се задржала у њему у наредној анализираној години. Састав становништва које је прешло из ниже у вишу фазу демографског старења, потврђује развој процеса старења, што је основна карактеристика старосне промене структуре становништва у источном региону у периоду од 1961-2012 године. Ситуација је другачија ако се одвојено размотре свака општина посебно, од којих су неке достигле највиши ступањ, фазу дубоке демографске старости. То ће сигурно имати знатан утицај на обим радно способног становништва и на могућности за просторно економски развој, развој одређених привредних грана, али и, на неки начин одредити правац будућих активности, њихових локација у зависности од старосне структуре и потреба становништва. У том контексту, могу се очекивати озбиљне промене у мрежи насеља, у њиховом демографском, функционалном развоју и физиономије.