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DEMOGRAPHIC COMPONENTS OF THE PELAGONIA REGION AS BENCHMARKS IN THE FORMATION OF THE LABOR CONTINGENT

Abstract: The economic circumstances in the past, an emphasized characteristic of a migratory region, as well as the later socio – economic circumstances that had a role of a push factor for the population, by themselves contributed for the negative demographic changes. Namely, in the past thirty years, the Pelagonia region faces a continuous decrease of the population and enters a stage of a deep demographic old age with which its population sustainability is brought to question. The changes of the demographic structures have and will have far reaching consequences on the possibilities for managing the human resources and providing demographic and economic vitality and revitalization of the region. According to the evaluations, the problem with an appropriate labor contingent, and with it appropriate workforce will be emphasized after the year 2016, when an increased outflow of population from the labor contingent is expected, which can not be compensated with a young population.

Key words: Pelagonia region, population, labor contingent, labor force

Introduction

The problem with the demographic recession in which the Pelagonia region is found is just a reflection of the intensive transformation of the social and economic growth in the region and the creation of migration that from another side is a frame for the values of the components of the natural movement. Pelagonia is a traditionally migratory region. The consequences of the emigration have directly influenced the demographic destabilization and the complex disorder of the population – geographic and the economic – geographic structures in the region. Taking into account that a traditional model of migration is in question, where most of the population of working and reproductive age migrates, the existing, clearly reduced reproductive base of the population is quite expected. The sizable reduction of the population by natural way, because of the greater number of deceased than newborn persons, i.e. due to the negative natural growth, the longer period of low birth rate, coupled with the worsened age structure especially the increase of older persons, point to a process of natural depopulation. It is particularly highlighted after the eighties of the twentieth century, and is expected to significantly deepen in the future. The

high natural depopulation which is in an advanced phase is just a confirmation of the process of biological decline. Primarily, it can be seen through the ageing of the population, which inevitably leads to aging of the working age population and the workforce.

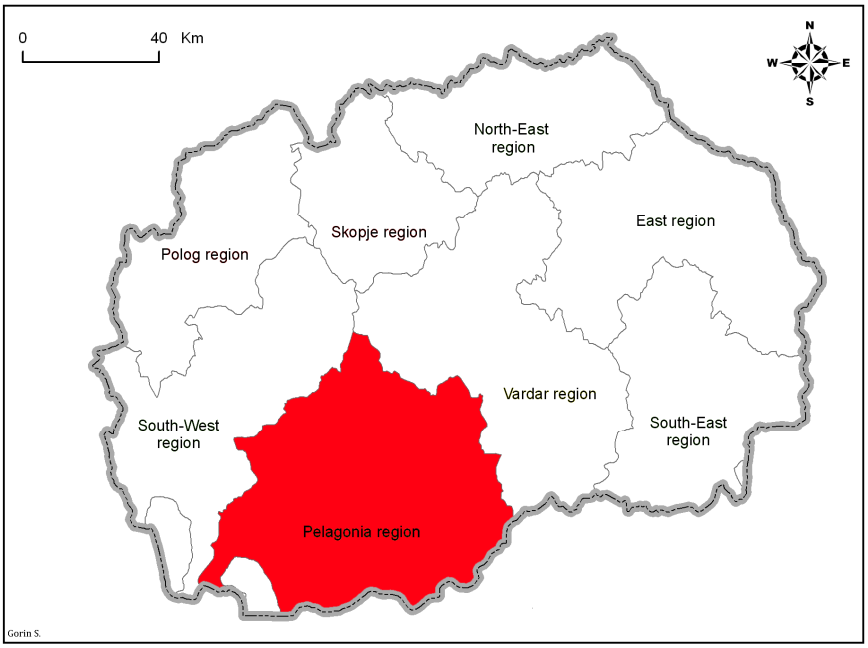
Considering the fact that the population is a basis for development, and the necessary link in the chain of organization, planning and utilization of the space, a serious problem arises here. The narrowing of the possibilities of the labor markets emphasizes the concern that the areas that face a rapid ageing of the population have the preconditions for slower economic growth (Boersch – Supan &Ludwig, 2009). The ageing of the population and the workforce of certain low – birth rate areas is a basis for consequences in the economic, social, cultural and humanitarian sphere (Matkovic, 1990).

Area of research

The Pelagonia region is spread on 18% of the total area of the Republic of Macedonia. It naturally covers the largest valley in the country – Pelagonia and the neighboring Prespa Valley.

In administrative terms, it covers 9 municipalities and 343 settlements, from which Bitola, Prilep, Resen, Krushevo and Demir Hisar have the statute of a city settlements.

Map 1. Position of the Pelagonia region in Republic of Macedonia



The Pelagonia region, besides its great surface area is populated by only 233306 inhabitants that give a low density of only 50 inhabitants per square kilometer, which is below the country's average (about 80 inh/km^2). The region features great natural resources that have extraordinary meaning for the economy of the country. Covers 23% of the total agricultural area in the Republic of Macedonia (of which 57.5% is pastures), 14% of the country's forests. The Pelagonia Valley is the biggest grain producer in the Republic of Macedonia and the biggest part of the production of industrial crops, mainly tobacco and sunflower is done here. This region holds the largest reserves of lignite and the three thermo power plants that are very significant for the energy in the Republic of Macedonia, also the marble in Prilep etc. Of significant importance is the hydro – energetic potential of the Crna River, which after the building of the hydro power plants Chebren and Galishte (although 25 hydro power plants are planned), will represent a solid basis for formation of an economic axis for development of this area. Besides, the region disposes of significant tourist motifs with natural and anthropogenic character (Prespa Lake, Krushevo, Pelister, Galichica etc).

Metodology and data source

The labor contingent is comprised of persons that are physiologically able for execution of particular work activity. This means that this number is determined from the age and gender structure of the total population in correlation with the demographic – historical development and the values of the birth rate, death rate, migratory movements and other outside influences. As major determinants in defining its scope are the volume of inflow of the working age population and the volume of outflow from it (Daskalovski V, Apostolovska Toshevska B., 2000).

This study used data from the censuses carried out by the State Statistical Office of the Republic of Macedonia. But, because of the time difference of the last census in the country from 2002, taken into account are the evaluations for the population in this area from 2011.

In the frames of the labor contingent, the population from 15 to 64 years of age of the both genders is reviewed from reason that the percentage of the real work engagement of the population over 64 years of age in the Republic of Macedonia is very low. Based on this category of persons, an evaluation for the coefficient of increase and replacement of the labor contingent is derived. For defining and analysis of the work force the definition of the United Nations (Kjurciev A., Dimitrieva E., Fink Jovanovic A., Janeska V., Lozanoska A. 2011) in accepted. Because of the methodological changes in the defining of persons that comprise the work force up to 1994, some of the comparisons related to 2002 are not made.

The coefficients are calculated in coordination with the methodology of Risteski, 1991 and Baletic, 1973.

The space is defined and analyzed on the basis of NUTS 3 classification of regions, and NUTS 5 classification of municipalities. At the same time for preparation of the cartographic display, the program package ARCGIS was used.

The analyze of the demographic components of the Pelagonia region as benchmarks in the formation of the labor contingent

The Pelagonia region has a character of explicit migratory area, with continuous process of spatial mobility of the population, emigration in the borders of the country and outside. In the region, the migratory flows have basically underwent a village – city relation or from one to another city settlement. In addition, this region is also known for the massive character of external migrations where in the last century from the region, mostly due to employment, a large number of people went to temporarily work abroad.

This condition is confirmed with the data from the census in 1971, accordingly from the Republic of Macedonia 54 667 persons went to temporary work abroad, i.e. they worked for a foreign employer, that represented 3.3% from the total population. Most of them originated from the Pelagonia region, or 37.95% from the total number of persons who temporarily worked abroad, that is 7.6% from the population in the Pelagonia region. The massive attendance of the migrations in confirmed by the data that on every 100 households in the Republic of Macedonia, there were 15.5 persons on temporary work abroad, and in the Pelagonia region every third household had one person who was on a temporary work abroad. The consequences of this are more severe because later their families joined these persons, and the migrations with a temporary character were turned into definitive migrations. That contributed to increasing of the number of persons that permanently left this region.

Already in 1994, the Pelagonia region is highlighted with above the average intensity of migration from 22.5% (Janevska, 2011)[1].

The influence of the migrations on the demographic conditions is multiple. They directly influence the quantity, the spatial displacement and the structure of the population, and from another side, determine the birth rate and mortality due to the impact on the gender and age structure of the population. Migrations abroad, together with migrations that were directed to other regions

[1] According to the census from 1994, it is noticed that according to the ratio of number of persons that are staying abroad and the total population of the country, with above the average intensive emigration (9%) stand out: Pelagonia (22.5%), and Southwest (14.1%) and Polog region (12.8%). (Janevska, 2011)

in the country have led to a somewhat rural exodus, consequences in the process of demographic aging of the population in the region etc.

Table1. Persons on temporary work abroad in 1971

municipality	persons on temporary work abroad	Population total	persons on work abroad at 100 inhabitants	persons on work abroad at 100 households
Bitola	13 378	124 512	10.7	49.6
Demir Hisar	1 031	15 653	6.6	29.8
Krushevo	313	13 015	2.4	11.9
Prilep	2 446	96 446	2.5	11.1
Resen	3 578	23 840	15.0	70.4
Total	20 746	273 466	7.6	34.5
Republic of Macedonia	54 667	1 647 308	3.3	15.5

While analyzing the mechanical movement of the population in the region, it is evident that in the past thirty years, the Pelagonia region is faced with continuous decrease of the population. From 1981 to 2011, the population was decreased by 20% or 57000 inhabitants. The decrease of the number of inhabitants speaks for a present process of depopulation. The largest demographic decrease is noted between 1981 and 1994 when the population is reduced for 48 328 inhabitants, or on average by 3700 inhabitants per year.

The intensive migration has strongly influenced the reproduction of the population, the outflow of young reproductive population, especially of the female population of fertile age, in interaction with the ageing process of the population, has led to lower levels of the birth rates and fertility in recent years, which further reflects on a longer time period.

Table 2 . Birth rate, mortality rate and natural increase rate

year	Republic of Macedonia			Pelagonia region		
	birth rate	mortality	natural increase	birth rate	mortality	natural increase
1971	22.9	7.5	15.4	15.8	7.4	8.4
1981	20.6	7.0	13.6	14.6	7.5	7.1
1994	17.3	8.1	9.2	14.0	10.6	3.4
2002	11.96	8.84	3.11	10.1	12.4	-2.3
2011	11.1	9.5	1.6	9.9	12.9	-3.0

The high rates of fertility after the World War II up until 1981 have compensated for the migration that took place in this period. The extended lifespan of the elderly persons has its influence. Gradually, but continuously, changes are noticeable in the number of births and deaths, as well as their result

– the natural growth. Specifically, the rate of natural increase is the simplest indicator of the bio – reproduction of the population. In conditions when the number of dead people is greater than the number of births, the biological recovery of the population in the region is brought in questioning.

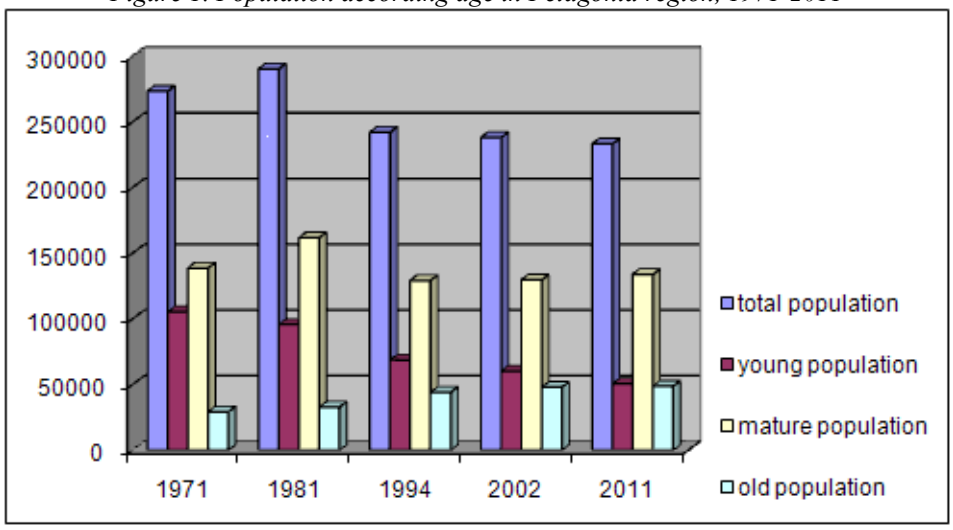
The comparison of the data shows that there is a present trend of continuous reduction of the birth rate, and according to the new data, in 2011 it was 9.9‰. The deteriorating age structure of the population in the Pelagonia region, the especially emphasized growth of the old population is a factor that contributed to the increase of the mortality of the population, despite the improvements in the area of health care. The overall mortality rate is among the highest in the country. Those changes in births and deaths accounted for the Pelagonia region to have extremely low birth rate, and in the last decade even a negative.

Because of the diversity in the demographic processes within the region, there are recorded parts with exceptionally reduced rates of natural increase. In 2011, except Dolneni municipality where the birth rate was 6.4 ‰, in all the other municipalities it was negative, and the lowest value was in the municipality Novaci where its -13.1 ‰. One of the main reasons leading to serious differences in birth rates is the socio – economic structure of the population, the level of education, the activity of the population, the cultural characteristics and many others. Whether the biological recovery of the population is ensured, an indicator is the total fertility rate. For a simple reproduction to be achieved, it should have a value of 2.1, or averagely that many children per one woman of fertile age. The Pelagonia region lately is beneath the critical value, which in 2011 amounted to 1.40, indicating that the population is not recovering. A similar situation was in 2002 when the rate of total fertility was only 1.49, which meant that the change of generations was not possible without taking into account the children born abroad (Janevska, 2011). In 1994, the condition was somewhat favorable, when the total rate of fertility amounted 2.0.

Although apparently the gender ratio is equal, individual municipalities like Mogila, Dolneni and Krivogashtani stand out with a significant presence of the male population that highlights the problem of establishing formal and informal marital communities, and thus affect the formation of births. The female population is a carrier of the reproduction and if that is not renewed it comes to reproductive depopulation. The contingent of fertile female population notes decreasing for a longer period, specifically expressed in the time section from 1981 to 1994 when it dropped by 22%. That means 16 211 female fertile population less, or average annual reduction per 1247 women aged between 15 and 49 years of age. Having into account the bio – reproductive characteristics of the female population and giving birth according to age, the decrease of the female population of optimal fertile age for about 30% (from 1981 to 1994) has especially negative feedback on the population.

The group of younger population from 1971 to 1981 notes a negative rate of change of nearly 9%. Already in 1994, the change in relation to 1981 was even -28% and this negative trend, although lesser, continues until the last analyzed year. If taken into account is the current rate of fertility on the one hand, and the fact that over half of the young people are over 10 years of age on the other, it is expected in such constant conditions in the relatively near future, the current share of 20% in the total population to be significantly reduced. Because of the more apparent influx of population in the group of mature population after 1971 and 1981 as a result of the high birth rate and numerous post war generations, this age group is still strong and accounts for 57% of total population.

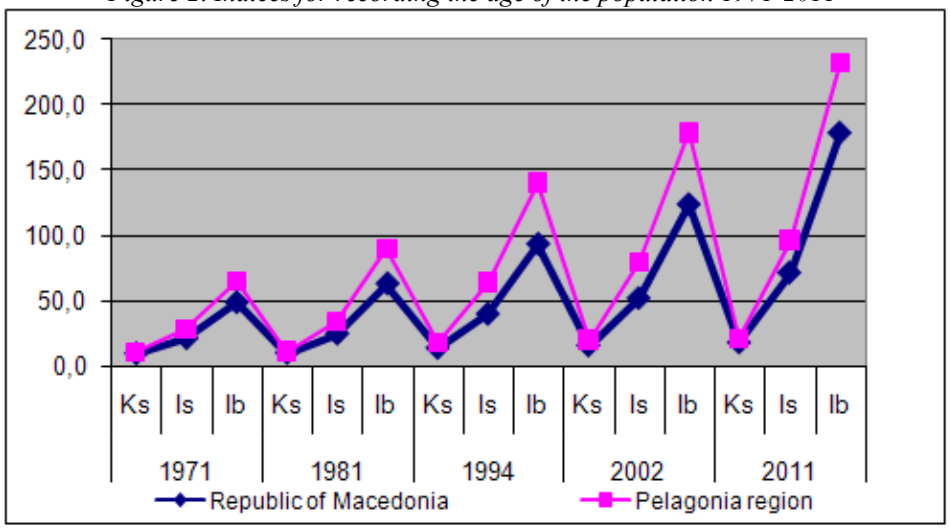
Figure 1. Population according age in Pelagonia region, 1971-2011



The reduction of the population of these age cohorts is intensively expected in the next ten years because of the difference between the inflow and outflow of population. The older population notes most significant increase from 1981 to 1994 (34%) and is expected for the present participation from 20.9% to be significantly increased in the next ten to twenty years. The ratio between the young and old population in 2011 is in the ratio of one to one, as opposed to one old person to 3.6 young people in 1971. Quite logical is the conclusion that the population in the region is ageing as a result of increased lifespan, reduced fertility and the ageing of the large generation cohorts of children born after World War II. With the listed values, the Pelagonia region is in the stage of demographic age that is characteristic for a post – transition stage of demographic development. In this context are the values of the coefficient of age and indices for recording the age of the population that already after the census of 1981 are

well above the average in the country (Table 2). Their value indicates a distorted demographic balance and difficulties in economic and social development.

Figure 2. Indices for recording the age of the population 1971-2011[3]



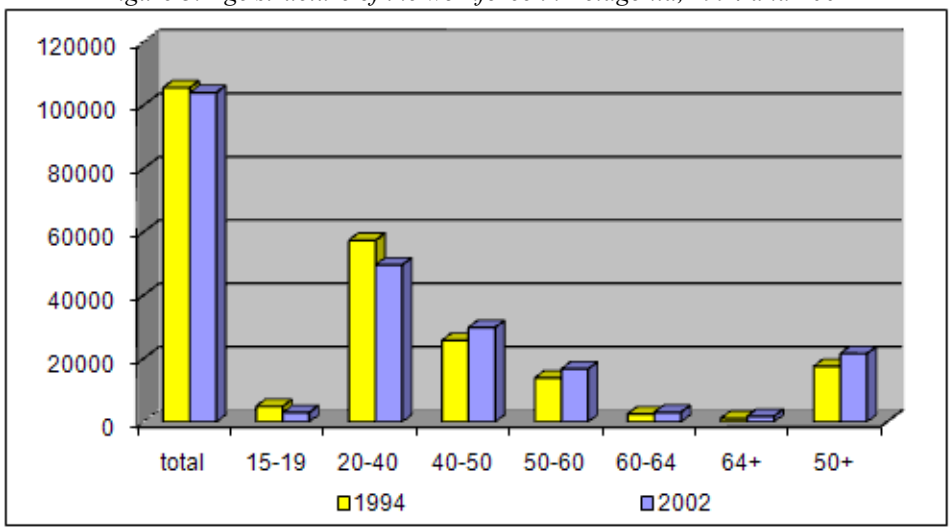
Forecast for movement of the labor contingent

The actual demographic happenings in the analyzed period without a doubt had their influence on the range and characteristics of the labor contingent that is "a physiological demographic frame for formation of workforce" (Baletic, 1973). The overall range of the labor contingent from 1981 to 2002 has decreased by 15.4% as a result of the intensive migration of the workforce outside the region within the country and abroad, in combination with changed conditions for realization of the natural components for dynamics of the population.

From the total work – able contingent in 2002, 53.3% was the workforce, where the workforce between the ages of 20 to 40 prevails with 47.7%. But, having into account the inflow and outflow of the mass of workforce, its presence is notably reduced in comparison to 1994 and there is increase of the participation of persons between the ages of 40 to 60 years. Consequently, the index of ageing of the workforce only between the censuses in 1994 and 2002 has increased from 58% to 85%, and the economically active population with over 50 years of age only in the analyzed period between the censuses increased its participation for nearly 23%.

[3] Ks- coefficient of age; Is-aging index; Ib - index of biological aging type

Figure 3. Age structure of the workforce in Pelagonia, 1994 and 2002



From there arises the question for future demographic possibilities for formation of adequate range of workforce.

Table 3. Projections of the labor contingent until 2021

period	Coefficient of inflow ***(u')***	Coefficient of outflow ***(i')***	Coefficient of increase ***(s')***	Coefficient of change ***(z')***
2002-2007	10,21	7,20	2,60	133,50
2011-2016	7,33	10,77	-1,10	86,78
2016-2021	7,84	11,41	-3,44	68,76

Own calculations

An adequate pointer for the consequences of the demographic – historical development of the population in the Pelagonia region represents the coefficient of increase of the labor contingent. Its values in the stated periods range form 2.60% to -3.44%, which in great deal corresponds to the percentage participation of generations before the labor contingent in the total population. The negative value from 2011 to 2016 indicates to difficult maintaining of the range of the labor contingent.

According to the performed evaluations for the coefficient of change of the work – able contingent, it is evident that the problem was felt after 2011, and will be especially expressed after 2016. Namely, on the basis of the calculated ratios in the period 2002 - 2007, to every 100 persons who left the labor contingent, as a substitute came 133.5 persons, or positive inflow of 33 persons. This change of generations on the principle of expanded reproduction will take place until 2011, when a reduced reproduction will start.

In the next periods according to the expected projections the outflow is increased on account of the inflow, that is from 2011 to 2016, the one hundred persons that left the labor contingent with 64 years of age, would be replaced with only 87 persons, and in the period form 2016 to 2021 a change with only 69 persons is expected. Not allowing for a sufficient flow to rebuild the labor contingent, the deterioration of the condition of the volume and the characteristics of the labor force is evident.

Of course, the fact that the volume of the workforce is not influenced only by the demographical factors should not be left out. The future trends for development can be changed under the influence of other non demographic factors such as the demand of workforce, the legal regulations of the age limit for retirement that can be changed according the demand, etc (Matkovic, 1990).

Proposed measures for overcoming the situation

In an effort to overcome this situation in the region, strategic measures and steps in order to intensify regional development, macroeconomic and microeconomic policy, population policy and more, are required.

Actions should primarily be directed towards the implementation of appropriate territorial – administrative organization of the space. This will strengthen the hierarchical status of individual settlements and their competence in organizing and planning the space to meet the needs of the individual and society. With this, possibilities will arise for strengthening of the social, infrastructural, economic conditions for keeping or attracting the young population that is the first step in the intention for population and biological revitalization of the region. Actually, the improvement of the material and social conditions for living are a precondition for a positive population dynamics. Of course, here important are: the benefits from dealing with the grey economy, the increase of investments, the alignment of the educational personnel with the demand of the workforce, a possibility for prequalification of the unemployed, a systematic and continuous training and subsidizing through the private sector of young persons that have the intention for opening small and medium enterprises (especially in the agriculture sector), tax easements for opening of small and medium enterprises, especially in the rural areas, affordable housing loans etc. To this, as a positive reflex is attached the subsidizes help for intensifying and stimulating the agriculture, giving state agricultural land under concession which in great deal creates conditions for agriculture as alternative for existence. Along with this, other steps are needed as training centers for permanent and high quality education and technical assistance to farmers, etc. Visionary step in the intention for improvement of the demographic condition of the region are the efforts to organize technical – industrial zones and strengthening the secondary sector, especially the industry.

Certainly needed are the other "silent" steps for educating the population, changing the habits and knowledge about the quality of life, primarily aimed at stopping the migration to cities in the region or to the capital of the state, including the advantage of living in smaller urban and rural settlements. However, this popularization of a quality living should be conducted secondary, following the implemented material and social, infrastructural and economic solutions to the area.

Summary

The demographic processes and changes have complex effects and lead to serious economic and social changes. This is especially felt when it comes to unfavorable demographic trends which in time lead to negative implications at a given population. Typical example in this regard in the Republic of Macedonia is the Pelagonia region that is faced with serious demographic problems. As a result of high population migration outside the region and the reduction of fertility on one hand, and the increase of the overall mortality rate and extending the life on another, the region is faced with a process of rapid aging. The unfavorable processes of demographic development that was characteristic for the past few decades gradually narrowed the biological basis of the region, and hence reduce the demographic capital which is the key holder of the economic development. Reducing the amount of the labor contingent is a problem with far – reaching consequences, which will particularly come to the expression in 2016 when there will be no opportunity for simple replacement of the labor contingent. That would lead to a series of consequences in terms of the age structure of the potential workforce, unused physical capital (primarily agricultural land, etc.), demotion of some economic activities, especially the labor – intensive, non – attractiveness for investment in other sectors and so on.

The imbalance that exists between the natural and the human resources, which is expected to be further deepened, requires the need of a regional study for the demographic revitalization of the region because inadequate workforce can mean difficulties in implementing economic policy for growth and development of the region and the country as a whole.

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