IMPLICATION OF DEMOGRAPHIC DIMENSION IN SUSTAINABLE RURAL DEVELOPMENT.
CASE STUDY: RÂŞCA VALLEY BASIN

IMPLICAŢIILE DIMENSIUNII DEMOGRAFICE ASUPRA DEZVOLTĂRII RURALE DURABILE.
STUDIU DE CAZ: BAZINUL VĂII RÂŞCA

A. LĂMĂŞANU[1], A.A. GHIURCĂ[1], F.C. MIHAI[1]

[1]*University "Alexandru Ioan Cuza" of Iasi, Faculty of Geography and Geology, Iasi, Romania; andreea_lamasanu@yahoo.com*

Abstract: This paper aims to capture the importance of demographic dimension in the sustainable development process of the rural space. From a series of statistics data we realized an analysis of demographic indicators, which it helped us to trace the development trends characteristic for our area of study. To understand the evolution in time and the implications of human resource in the process of development it was necessary referencing them with national or local historical events. Demographic dimension analysis highlights the development stage of rural space and help the formulation of the future local policies that regard the sustainable development.

Key words: sustainable development, rural area, development indicators, demographic dimension

INTRODUCTION

Sustainable development of the rural areas represents a systemic analysis at the interaction between environmental, economic, social, political and cultural dimensions.

The populations of an area represent its human capital, an inexhaustible resource of creativity, which promotes innovative strategies that guarantee the welfare society (Sepúlveda, 2008). So, the demographic dimension has a particular importance for the development of rural areas. The attractiveness of a rural area may contribute to population growth and the increasing number of young people is favorable for the local development, because of their efficient activities. At the opposite pole is the demographic imbalance that may exist: the population decline, the increasing of older population that leads to high mortality rates; these

warning over the development direction of rural space (Gavrilescu, 2000).

The involvement of human factor in the development process is essential. Demographic policies implemented, over time, have shown that people can influence voluntary the development of the area that they inhabit.

MATERIAL AND METHOD

The rural space analyzed in this research overlaps on the administrative boundaries of the Bogdăneşti and Râşca communes and is populated by a community with over 9000 inhabitants. The geographically area of study corresponds to the basin of the River Râşca, located in the South-Eastern County of Suceava.

This study was realized by the support of statistical data provided by Suceava County Statistics Department and Romanian National Institute of Statistics. Thus, was created a database with different demographic indicators, for the period 1990-2010. For older data than 1990 we used data from censuses and other statistical evidences. To determine the population structure by age and calculate aging of population index and dependency index were used only data from census 1977, 1992 and 2002, because they contain more detailed information.

In order to integrate the demographic dimension in sustainable development process, we considered necessary the analysis of indicators such as: number and density of population, age and sex structure of the population, birth, death and infant mortality rate, population fertility, marriage and divorce rate and net migration rate.

The graphs interpretation was made by references to historical events that could mark some demographic trends. The results obtained from the analysis of the statistical data were compared with national and Suceava county trends.

To evidence the evolution in time of the demographic dimension we used a methodology for quantify the sustainable development level. This methodology has been developed in the framework of Inter-American Institute for Cooperation on Agriculture in Costa Rica, by Sergio Sepúlveda and aims to estimate the level of sustainable development by calculating an index. The proposed methodology offers the possibility to calculate an index for each dimension of sustainable development in different period of time.

To calculate the demographic development dimension we chose 8 variables considered representative (D1 - the number of inhabitants, D2 -

the aging of the population index, D3- the renew index of the labor force, D4 - the dependency index, D5 -fertility rate, D6 - birth rate, D7- mortality rate, D8 - net migration) for the years 1977, 1992, 2002 and 2010. For 2010, due to the lack of data on the population structure by age, D2, D3 , D4 and D5 variables were estimated, starting from 2002 data census and analyzing the birth and mortality rate from 2002 to 2010.

Statistical data for each proposed variable was introduced in the Excel program and were established relationships between the variables and the sustainable development. Thus, if an increasing value of a variable has positive effects on the process of sustainable development, the relationship is noted with (1), and on the contrary, if this increasing influences negatively the system, the relationship is noted with (0). After the establishment of relations between variables and the development process (negative or positive), is need to be adjusted to a common scale by using a relativization function, the same functions on which it is based also the calculation of the Human Development Index (Sepúlveda, 2008). After these calculations we get indices for each variable, which may vary between 0 and 1. The average of these indices is characteristic for the analyzed period, its values determinate the level of development dimension: 0 - 0.2: collapse, 0.2 – 0.4: critic, 0.4 - 0.6: unstable, 0.6 - 0.8: stable, 0.8 – 1: optimum.

RESULTS AND DISCUSSION

Our study area is geographically situated to the contact of the plateau with Carpathian hills, and is a favorable living space because it benefit of important natural resources. The favorable conditions of living have made the population to grow in time (Figure 1). As it can be seen from the analysis of the statistical data in the past 140 years, the number of inhabitants in the area increase, with the exception of periods marked by historical conflicts (e.g. the National Independence War from 1877-1878) when the population decrees (Petroaia, 2003). Positive deviations from the tendency line correspond to the Communist period, which advocated a pronataliste policy between 1966 and 1989. More detailed analysis of the data from the past 20 years captures clearly the factors that have influenced the evolution of the population in time (Figure 2). Thus, the Communism regime fall, after 1989, is feeling by the decrease number of population in the '90, due to the abort legalization and increased migration, in special the external one. Since 2003 the Râşca valley basin population increased slow

and follows the rural county trends. Population sex structure shows a higher proportion of male (51%) then female (49%), reverse situation for the national level, but mainly proportion of males can be explained by the seasonal migration of forest exploitation (Petroaia, 2003).
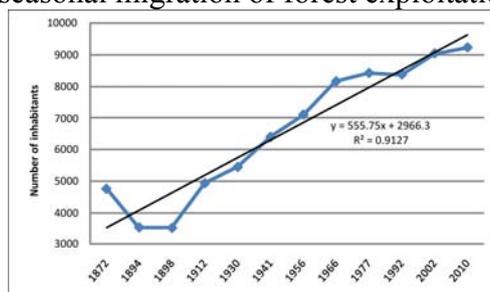
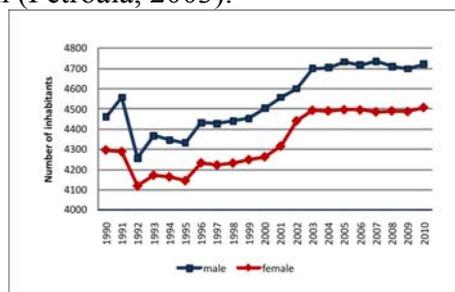Fig. 1 – The evolution of population during 1872-2010

Fig. 2 – The evolution of male and female population during 1990-2010

Population growth has positive effects on the process of local development as long as it is connected with the density and age structure. The density of population has increased from 23.28 people per km^2 in 1930 to 39.27 people per km^2 in 2010, but is low compared to the county value (82 people per km^2) especially due to the large surface occupied by forests in Râşca commune. To determine more specifically human pressure on the territory, we calculated the net density obtained by dividing the population to the actual occupied and valued surface (Muntele, 2006). Dividing population to the total cropland, we got much higher values of density from 197 people per km^2 in 1990 to 204 people per km^2.

Population evolution by age and sex structure specified in population pyramid shows a gradual increase of the number of old people and a decrease of the number of young people. Thus, in 1977 the basis of the pyramid was well represented due to the increase of birth rate in that period (Figure 3). For the years 1992 and 2002 we notice a continued decrease in base of population pyramid and an increase in the top of population pyramid, showing the trend of population aging (Figure 4). Values of demographic aging index (calculated as the ratio of the old population over 60 years and young people under 20 year age) (Muntele, 2006) increase from 0.29 in 1977 to 0.50 in 1992 and 0.69 in 2002, which demonstrates an advanced level of population aging in the study area. Considering the constantly decreasing of the birth rate we can conclude that the population aging continued to grow after the year 2002 in the Râşca valley basin.
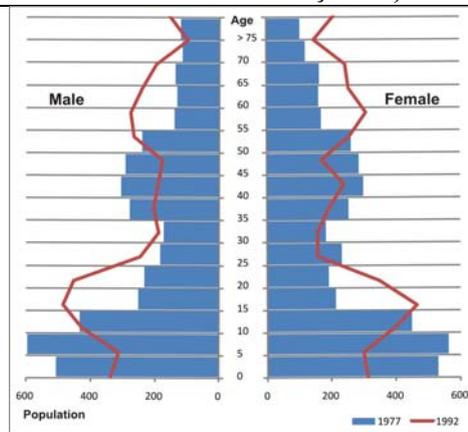
346

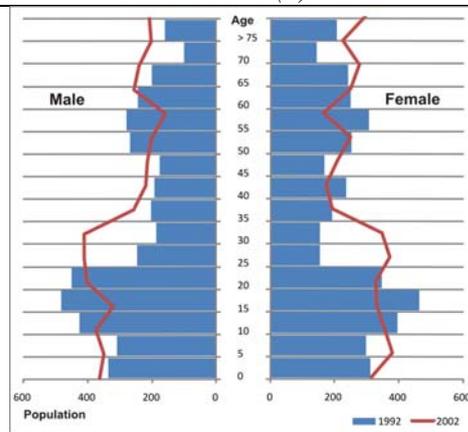Fig. 3 – Age and sex distribution for the years 1977 and 1992

Fig. 4 – Age and sex distribution for the years 1992 and 2002

Analyzing the gender proportion, we notice that the male population is bigger at birth and maintains to the age group 50-54, when the proportion of the female population starts to grow. This phenomenon is explained by the life expectancy which is higher at women, because they have a life more balanced, less exposed to risks. In 2009, in rural areas from Suceava County, the average life expectancy value was 77. 94 years for women and 70.60 years for men (Anuarul Statistic al Judeţului Suceava, 2010).

To highlight the demographic effects of economic dimension, we calculated the renewal labor force index and the age dependency index. So, the values of renewal labor force index show that the mature population (30-44 years) was replaced by young people (15-29 years) in a proportion of 87% in 1977, growing to 183% in 1992, and decreasing to 135% in 2002. Considering that the birth rate has a declining trend in recent years, the renew labor force index will gradually decrease from year to year. The actual situation on the labor market, influenced also by unemployment rate, is putted in evidence by the dependency index (the ratio between the active and inactive population) whose values increase from 1.02 in 1977 to 1.13 in 1992 and to 1.36 in 2002, which means that in 2002 an active person had to support 1.36 inactive persons.

The birth rate has a descending evolution in the last 10 years and the mortality rate has a continued growth from 2006 (Figure 5). This tendency causes a negative natural increase, also available at the national level, but not in Suceava County, where the natural increase remains positive. The

mortality rate has increased in recent years due to aging population aging and it is not connected with the rate of infant mortality, which has low values in the past 20 years, not exceeding 1‰.
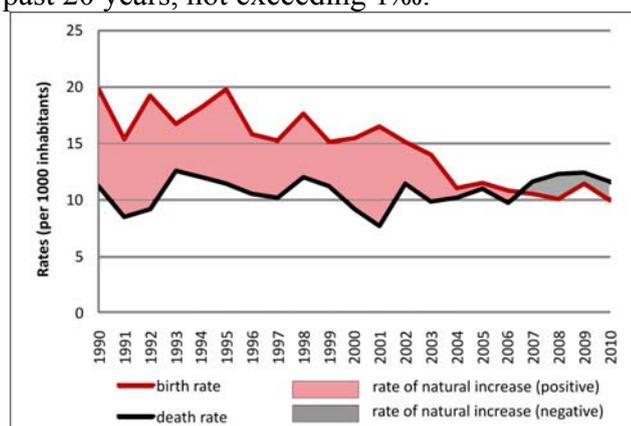

Fig. 5 – Natural increase, birth and death rates

Marriage rate in the Râşca valley basin, presents oscillating values, the tendency is still declining, highest values were recorded in 1992: 26.10‰, and the lowest values in 1999: 4.59‰ (Figure 6). Marriage rate in 2010 was 6.28‰, nearest the county value from rural areas (5.9‰) and higher than national value from rural areas rural areas (4.2‰). A tendency of family instability is determinate by a slight increase of divorce rate in the last years. In 2010 divorce rate has a value of 2.27‰, compared to the rural area values from national level (1.09‰) and county level (1.21‰).

From the economic and demographic point of view, net migration has an important role because it leads to reducing the labor force in territory but at the same time it contribute to the local economy through the income which it bring. Net migration balance recorded negative values in the analyzed period, except 1999-2002 and 2008-2010. Until 1990, the internal migration had a higher proportion and was the result of labor force movement to other areas. After the borders opening, migration flow was headed to Western Europe, in countries such as Italy, France, Spain, Germany, etc. The large number of arrivals in recent years is due in particular to the economic situation which characterizes the European States. A few numbers of arrivals in territory is represented by retired people who are attracted by the quiet country life.

Calculation of demographic index represents a synthesis analysis of

for Râşca valley basin and shows its evolution in time. As can be seen (Figure 6), demographic index has high values for 1977 and 1992 (0.62 and 0.63), which means that the demographic situation was stable.
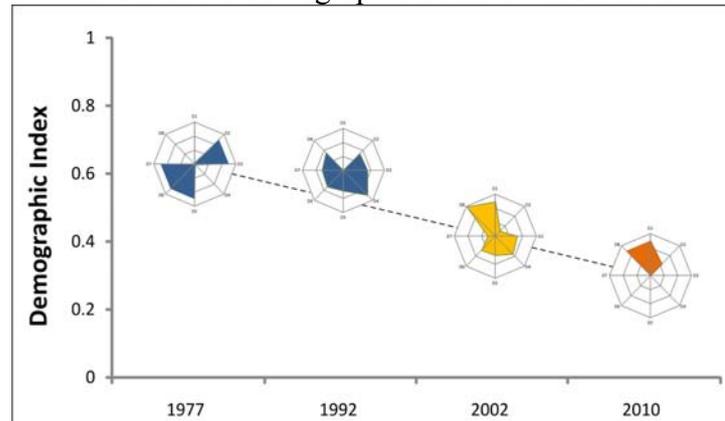

Fig. 6 – Development trend of demographic dimension

For 2002, the 0.43 index value indicates that the system becomes unstable, the most affected being D3 variable (renewal labor force index) and D7 variable (mortality rate). For the next 10 years the index continued to fall, reaching at 0.30 in 2010, which means a critical situation for the demographic system.

CONCLUSIONS

The evolution in time of the demographic dimension is important to a territory because it has consequences in economically and socially plans.

As it could be seen from the analysis of statistical data, the demographic indicators trends correspond with those of national and county level. The main problems that affect the demographic dimension are related to the decrease of the birth rate and the mortality increase due to the emphasis of population aging.

The quantification of demographic dimension development shows that human capital suffers an imbalance, in the study area. This situation has deep implications in economic and social levels because of the reducing labor force and population aging. Demographic problems are characteristics for other Romania rural areas and this fact impose the authorities to initiate economic and social policies that would change the current demographic trends.

REFERENCES

1. GAVRILESCU Daniela, GIURCĂ D., (2000) - Economie agroalimentară, Editura Bioterra – ISBN: 973-9282-96-2, p. 353, Bucuresti.
2. MUNTELE I., (2006) – Geografia populației, Editura Sedcom Libris – ISBN: 973-670-184-0, pp. 42, 115, 217, Iaşi.
3. PETROAIA ELENA, PETROAIA V., (2003) – Râşca, vatră de istorie şi spiritualitate (studiu monografic), Editura Europrint, ISBN: 973-7952-01-4, pp. 84, 86, Galați.
4. SEPÚLVEDA S., (2008) – Géstion del desarrollo sostenible en territorios rurales: métodos para la planificación. Instituto Interamericano de Cooperación para la Agricultura – ISBN: 13: 978-92-9039-872-1, pp.31, 34, San José, Costa Rica.
5. SEPÚLVEDA S., (2008) – Metodología para estimar el nivel de desarrollo sostenible de territorios. Instituto Interamericano de Cooperación para la Agricultura – ISBN: 13: 978-92-9039-872-1, p. 33, San José, Costa Rica.
6. *** - Anuarul statistic al județului Suceava (2010), Institutul Național de Statistică Bucureşti, Direcția Județeană de Statistică Suceava, ISSN: 1582-6546, pp. 6-9.
7. INSSE: https://statistici.insse.ro, January, 2012.

ACKNOWLEDGEMENTS