

Original Article**Fizes Watershed, Romania. Population Study****MIHĂIESCU Tania****University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Mănăştur St., No.3-5, 400372 Cluj-Napoca, Romania*Received 12 June 2011; received and revised form 10 July 2011; accepted 2 August 2011
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Abstract

The paper aims at highlighting the changes that occurred in the population dynamics within the Fizes watershed, a rural area located in the Transylvanian Plain in the northern part of Romania, from 1850 to 2007. While demographic aging is a nationwide phenomenon, it is more pronounced in rural areas because of age-specific migration flows. The rural population is a major source of village development. The area considered in this case study is thought to be one of the least developed in the North West region of Romania, not as a result of a lack of resources but because of a lack of socio-economic development and the predominance of rural settlements. The demographic profile of the Fizes watershed has changed significantly in the analysed period. Socio-economic conditions, throughout the last 50 years, triggered a number of manifest phenomena concluded in a severe population decrease. The continued out-migration of young adults towards the nearby cities, the growing numbers of retirees and the lack of working places, have resulted in rural communities where residents are older. The conclusions of this study are that the population aging and the demographic dependency rate for the Fizes watershed is similar to the trend for most rural areas of Romania. Solving the multitude of typical rural demographic problems calls for establishing long-term and time-stable strategic development policies.

Keywords: Romania, Fizeş watershed, rural population, territorial distribution, demographic decline, migration, population structure on age groups

1. Introduction

The EU will, in the coming decades, face a number of challenges associated with an aging society. There are three main factors that explain this trend: persistently low fertility rates, increasing life expectancy, and a baby-boom generation that will soon start to reach retirement age [19]. According to Census data undertaken in 2002, rural areas cover in Romania 87.1% of the territory, most of them spread through the hills and valleys, with a population of 9.7 million inhabitants (54% of total population) [1].

During transition, Romania has presented many negative demographic evolutions, as compared with the other EU countries [2]. The total population still kept decreasing sharply, by approximately one million people (of which 52% in the rural areas) [3]. The reasons for this decrease were primarily severe aging, decreasing birth-rates and the upsurge of external migration, people looking for a job abroad and supplementary for rural areas, the continued out-migration of young adults towards the nearby cities.

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Table 1. Population evolution in Fizeş Watershed area.(Population Census data – National Institute of Statistics - Romania, Hungary)

Commune	Year																
	1850	1880	1890	1900	1910	1920	1930	1941	1956	1966	1977	1980	1985	1990	1992	2002	2007
Buza	1364	1186	1658	1804	2004	1856	2096	2382	2233	2169	1913	1785	1612	1569	1498	1389	1360
Cămăraşu	1983	1773	2221	2492	2658	2495	3028	3361	4145	4149	3762	3588	3226	2931	2675	2705	2816
Cătina	2232	2285	2856	3035	3129	3026	3376	3764	4138	3812	3235	3123	2781	2637	2311	2209	2091
Fizeşu	2734	2640	3067	3171	3675	3343	3755	3825	3889	3716	3446	3400	3005	3772	2632	2652	2664
Gherlii	2769	2724	3186	3313	3440	3280	3691	3964	4086	3630	2863	2597	2219	1923	1892	1759	1718
Geaca	2796	2974	3503	3902	4304	4527	4829	5382	5758	5346	4929	4780	4099	3650	3729	3494	3539
Mociu	1988	1906	2179	2458	2700	2748	2896	3331	3731	3135	2461	2343	1962	1841	1617	1388	1265
Pălatca	2734	2974	3194	3496	3703	3785	3824	4002	4348	3800	3137	2937	2596	2273	2107	1746	1736
Sânmartin	3321	2759	3203	3386	3717	3612	4305	4444	4645	3934	4080	3989	3641	3427	3190	2724	2606
Sic	3485	3411	3411	3658	3855	3830	4035	4325	4536	4058	3285	3118	2724	2466	2300	2057	2089
Țaga																	

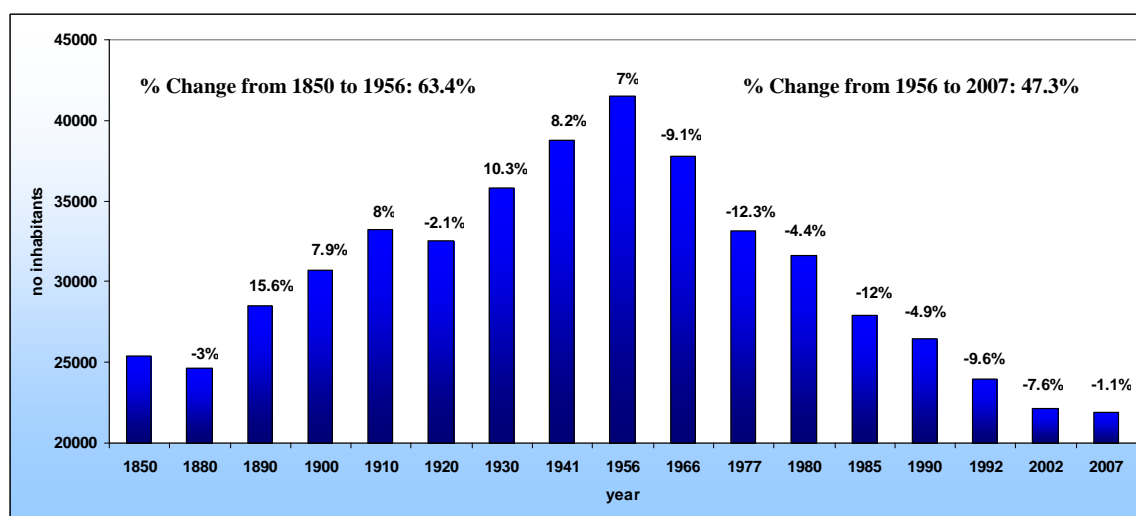


Figure 2. Number and percentage change of inhabitants in Fizeş watershed area

The total number of inhabitants had two opposite tendencies: augmentation from 1850 to 1956 and decrease between 1956 and 2007 (fig. 2). Since reaching a peak of 41,509 in 1959, the number of inhabitants in Fizeş Watershed area has steadily declined: there were 21,884 inhabitants in 2007, which represented a 47.3% decline. The largest decrease (as shown in fig. 2) occurred between 1966 and 1977; the smallest declines of 1.1% occurred in the five-year period from 2002 to 2007. The decline in the rural population is due to external migration and aging with a significant increase in overall mortality and low birth rate. Noteworthy to mention is also the policy of forced industrialization when young people migrated to the cities near the region (Gherla, Cluj-Napoca and Turda). A complementary reason is the collectivization of agriculture that took place in the early years of the Communist regime.

Regarding the population dynamic of the Fizeş watershed area communes different growth

rates, varying both in intensity and direction, can be identified and classified into several characteristic stages (fig. 3).

Stage 1850-1910 is characterized by a slow and steady increase in the number of inhabitants from 25,406 in 1850 to 33,185 in 1910, with an increase of 23.44% (aprox.130 inhabitants/year), due mainly to the natural growth rate.

At the level of administrative units (communes) included in this study, the growth rate varies in this period between a minimum of 9.6% (Țaga) and a maximum of 35.04% (Mociu) with seven out of ten communes achieving growth rates of over 20.1%.

During the time period 1910-1956 a growth of 20.05% (181 inhabitants/year) was registered, with the total population achieving its historical maximum (41509 inhabitants in 1956, over twice the number a century prior). This growth can be attributed to the increase in food production as well as living standards coupled with a lower infant mortality rate. This high growth rate was

curtailed by the two world wars. The studied communes grew between 5.50% (Fizeșul Gherlii) and 35.87% (Cămărașu).

The latter half of the XX Century (1956-2007) sees a sharp decline in total population numbers. In 2007 the Fizeș watershed communes would number 19625 less people compared to the previous stage, with a drop of 47.28% (385 inhabitants/year).

All of them suffered a steady drop in numbers especially among younger generations, with all communes registering declines of over 30.1%.

This lead to population aging as well as a change in the structure and values of the society.

The collectivization process and the changes in society brought on the main cause of the decline that would plague the Fizeș Watershed

communes for decades, namely the exodus of young people towards the regions major cities, either as a result of the communist regimes forced industrialization or as a result of the younger generations search opportunities, jobs and of a better life style. Following the collapse of communism the situation changed drastically. The reintroduction of abortions led to a drop in birth rate and the relative liberalization of the free movement of peoples and of the labour market mint that it was even easier for young people to leave their rural homes. The transition from a socialist planned economy saw the destruction of the collective farms and assorted infrastructure. However these were not replaced by modern capitalist-style farms, rather people reverted back to the subsistence agriculture characteristic of earlier centuries.

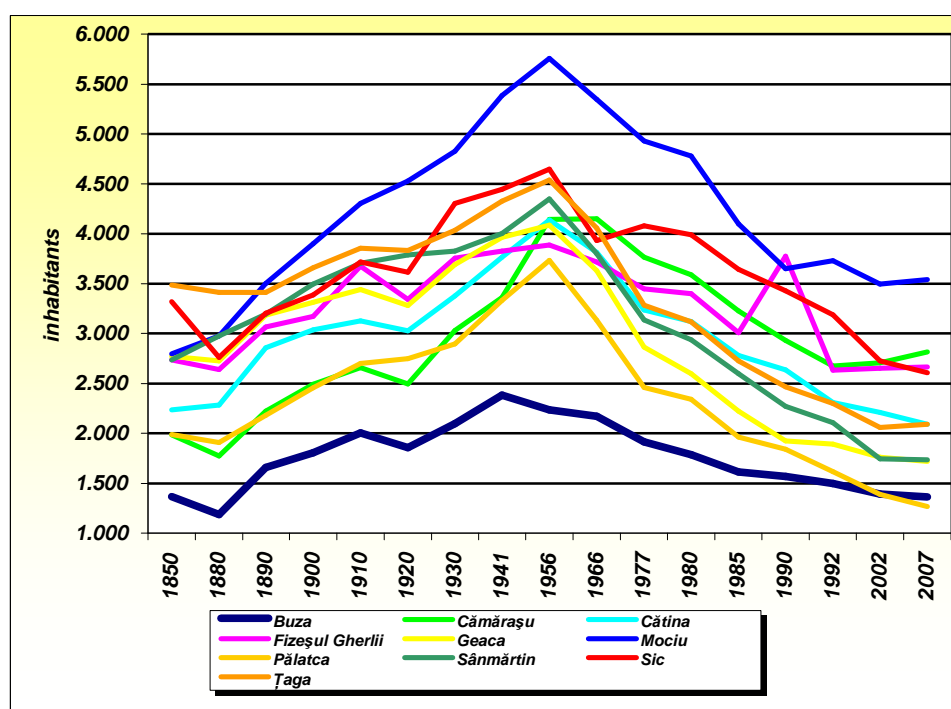


Figure 3. Demographic trend in the Fizeș Watershed Communes (1850 - 2007)

This area had approximately the same demographic evolution as the Romanian social and economic system, with similar demographic implications (in many cases the forced augmentation of the population and the

appearance of disequilibria between female and male population, depending on the economic profile of the polarizing urban center, as well as the mobility due to the economic element, from rural to urban, influencing the population structure on age groups (fig. 5).

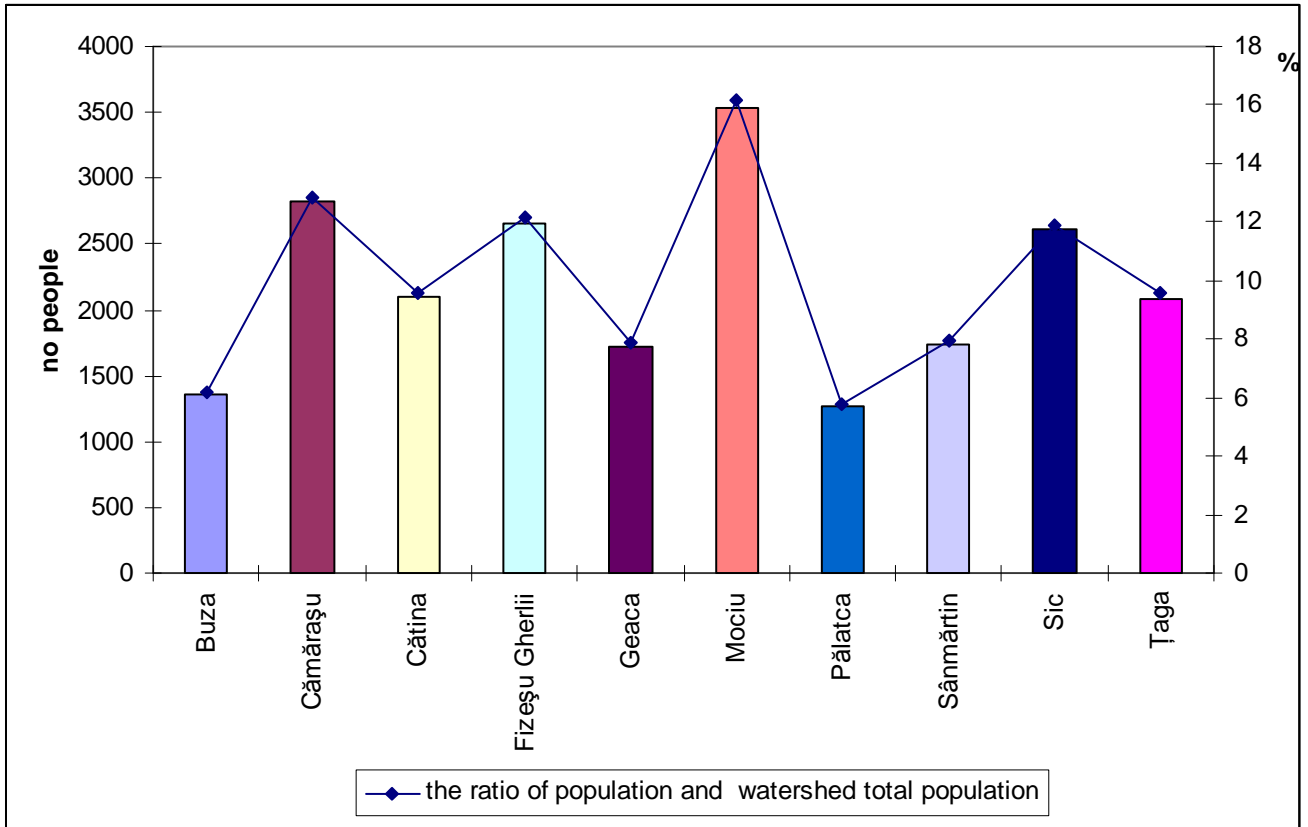


Figure 4. The distribution of population and its ratio /total population at watershed level.

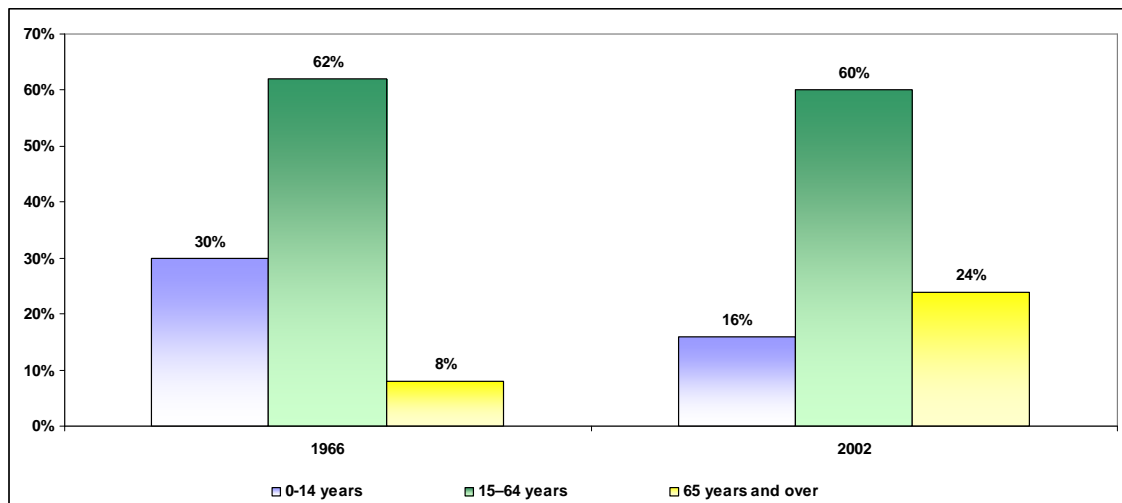


Figure 5. Percentage distribution of inhabitants in Fizeș watershed area by age group, 1966, 2002

The analysis of age-sex pyramid highlights changes of the population structure on age groups: an expansive pyramid with a well developed base, indicating a high proportion of children, a rapid rate of population growth and a low proportion of older people in 1966 (fig. 6) and a constrictive pyramid in 2007 (fig. 7).

The sharp transition from one to the other is not a classical case of declining birth and death rates over a period of many generations, characteristics of a developed society but rather can be attributed to the high emigration rates of the age groups forming the base of the pyramid.

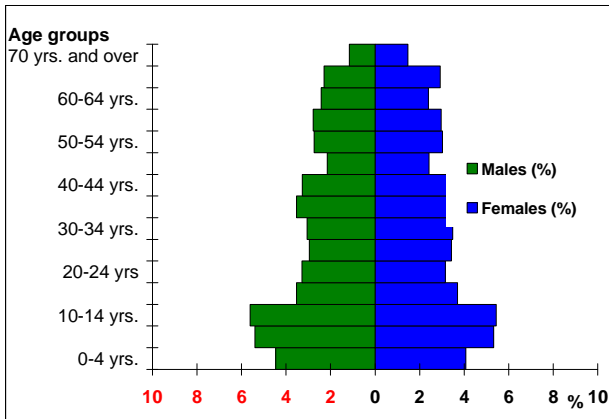


Figure 6. Fizeș watershed area: Age-Sex Distribution, 1966

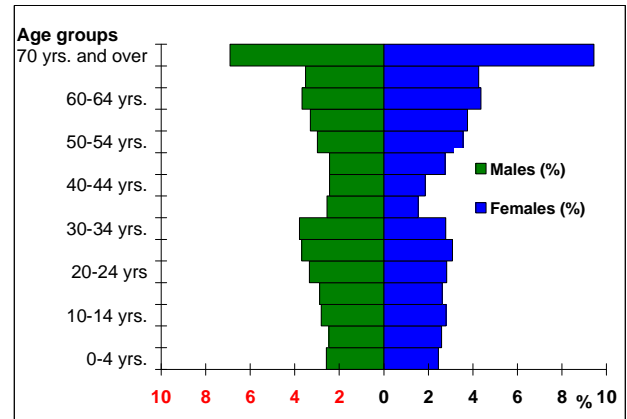


Figure 7. Fizeș watershed area: Age-Sex Distribution, 2007

We have determined the dependency ratio (table 3), taking into consideration the main age groups. The dependency ratio measures the % of dependent people (not of working age)/number of people of working age (economically active). In

the analysed period 1966 – 2007) is asserted a decrease of pressure from young population and an increase from the elders, this fact suggesting the need of increased social assistance towards the aged population.

Table 3. Dependency ratio in the Fizeș Watershed communes area

No. Commune	1966			2007		
	Children (0-14)	Pensioners (> 65)	Children + Pensioners	Children (0-14)	Pensioners (> 65)	Children + Pensioners
1. Buza	74	24	98	40	62	102
2. Cărnărașu	103	20	123	62	54	115
3. Cătina	85	24	109	52	69	122
4. Fizeșu Gherlii	72	30	103	48	53	101
5. Geaca	64	29	93	43	80	123
6. Mociu	80	23	103	50	62	112
7. Pălatca	77	23	100	35	97	132
8. Sânmărtin	57	25	82	38	102	139
9. Sic	82	27	109	37	62	99
10. Țaga	63	27	90	35	85	120
TOTAL BASIN	75	25	100	45	69	114

Population density (the arithmetic or crude density) fell from 67.31 people per sq. km in 1956. to 35.49 people per sq. km in 2007 (fig. 8). Population density provides a way of measuring the impact of people on the natural environment-it is thus a stressor indicator.

In the studied communes, the density varies between 20.89 people per sq. km (Țaga) and 57.42 people per sq. km (Cărnărașu) (table 2).

Agricultural density (the total rural population/amount of agricultural land), **physiological density** (the total rural population / amount of arable land) and **ecological density** (the total rural population / amount of forest land) are other important indicators of antropic pressure, indicating the demographic concentration in relation to agricultural land. These indicators follow the same trend witnessed in the population decline of the studied area (figs. 9 - 11).

Table 3. Population density in the Fizeş Watershed communes area

	Arithmetic density (people/ km ²)			Agricultural density (people/ha)			Physiological density (people/ha)			Ecological density (people/ha)		
	1956	1992	2007	1956	1992	2007	1956	1992	2007	1956	1992	2007
Buza	76.03	51.00	46.31	1.00	0.67	0.66	1.47	1.03	1.05	4.51	3.03	2.52
Cămăraşu	84.52	54.55	57.42	0.96	0.62	0.70	1.31	0.93	1.06	19.10	12.33	10.59
Cătina	78.42	43.79	39.62	0.94	0.53	0.51	1.40	0.89	0.84	10.02	5.60	4.64
Fiz. Gherlii	57.94	39.21	39.69	0.86	0.58	0.63	1.85	1.79	1.49	2.26	1.53	1.35
Geaca	59.49	27.55	25.01	0.77	0.35	0.34	1.20	0.57	0.63	6.07	2.81	2.39
Mociu	78.78	51.02	48.42	0.94	0.61	0.57	1.38	0.87	1.18	10.25	6.64	5.48
Pălatca	77.15	33.44	26.16	0.96	0.42	0.35	1.37	0.67	0.55	6.04	2.62	1.42
Sânmărtin	60.46	29.30	24.14	1.01	0.49	0.43	1.71	0.89	0.78	5.32	2.58	1.57
Sic	82.40	56.59	46.23	0.90	0.62	0.57	1.74	1.28	1.04	3.38	2.32	1.40
Țaga	45.36	23.00	20.89	0.65	0.33	0.33	1.07	0.58	0.59	2.13	1.08	1.09

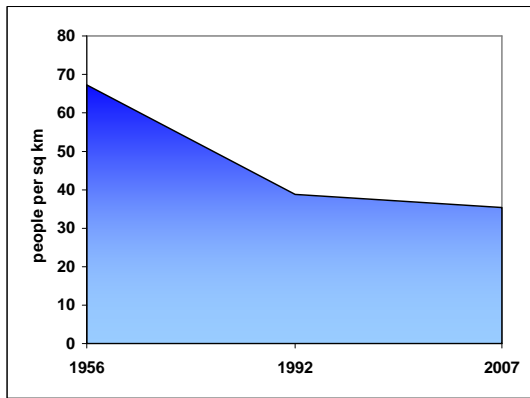


Figure 8. Population density in the Fizeş watershed area

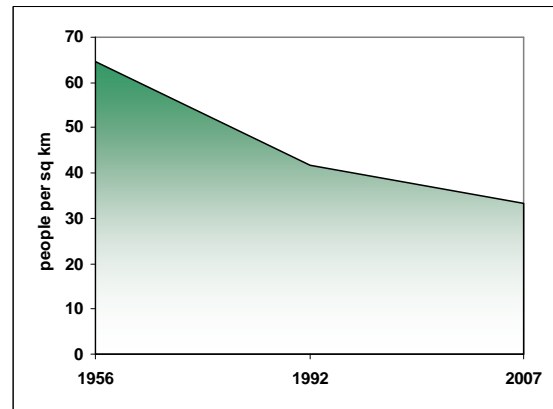


Figure 9. Agricultural density in the Fizeş watershed area

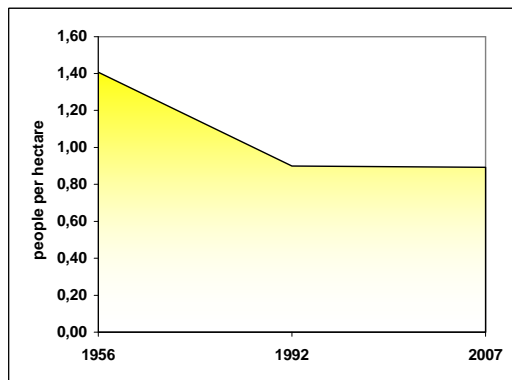


Figure 10. Physiological density in the Fizeş watershed area

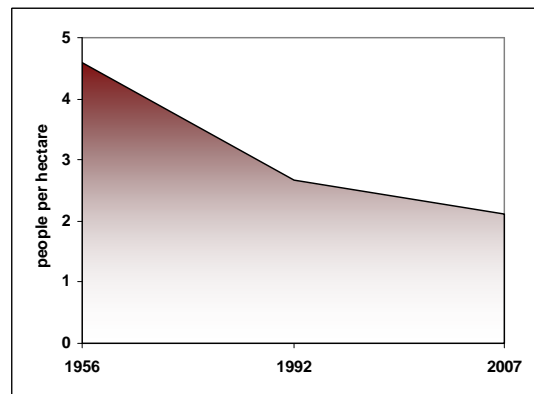


Figure 11. Ecological density in the Fizeş watershed area

3. Conclusions

The population aging and the demographic dependency rate for the Fizeş area is similar to the trend for most rural areas of Romania. Solving the multitude of typical rural demographic problems calls for establishing long-term and time-stable strategic development policies. Lower agricultural and physiological densities can lead to the abandoning of agricultural surfaces, lower agricultural output,

degradation of agricultural infrastructure, relapse into subsistence farming and a shift in occupational employment towards the tourism and service sector. However, as witnessed in the evolution of the agricultural sector in advanced western societies, lower rural densities need not necessarily result in a lower agricultural output. In these cases, the increasing use of technology and modern farming and organizational techniques lead to an ever increasing output of agricultural produce despite a shrinking population of farmers.

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