

REGIONAL DIFFERENCES BETWEEN RURAL AREAS OF SERBIA IN POPULATION AGING AND AGRICULTURAL ACTIVITIES: CASE STUDIES OF THE INĐIJA AND KNJAŽEVAC MUNICIPALITIES

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As one of the signs of demographic change, population aging influences various spatial categories: economic activities, social features, land-use, perspectives for future development and more. Even though the process is indicative on a national level, there are significant differences among geographically and functionally distinctive regions. Based on considerable regional differences in the development of Serbia, this paper analyses the key problems of rural areas related to the interdependences of population aging and agricultural activities. Research on aging processes, changes in agricultural activities and their features is based here on the examples of two case studies. The Inđija and Knjaževac Municipalities have been chosen to represent geographically different regions – lowland and mountainous. This study uses both quantitative and qualitative approaches in order to achieve a better understanding of the situation. Statistical data were used to illustrate processes of aging and agriculture where data from two census years indicate a trend of changes. Interviews conducted with representatives of local government, entrepreneurs and local citizens from the villages are the source of information for quantitative analysis. Population aging and agriculture are examined separately, followed by an illustration of their interdependences.

Key words: rural areas, demographic change, population aging, agricultural activity, land-use change

POPULATION AGING IN RURAL AREAS

Changes in Population Aging in Rural Areas

Many countries in the world have noted a median age increase in rural areas. Additionally, this process in developing countries has increased more sharply among rural populations than in urban ones (Stloukal, 2001). Census data from poor countries testify that the rural population is older than the urban population (Marocoux, 1994; Martin and Kinsella, 1994). Overall, the most developed

countries in Europe, America and Oceania are more involved in aging process and face more problems in this area than the rest of the world (Stloukal, 2001).

It is a fact that the population aging process is more than just a demographic change. It influences a whole range of social and natural spheres and therefore requires the attention of thorough studies regarding agricultural and rural development as well. In the course of finding appropriate measures to "fight" against aging, an acknowledgment and deeper understanding of the relationship between the aging process on the one side and the social, economic and natural changes on the other side are of great relevance, particularly in the rural context (ibid.).

The causes and consequences of agricultural activities and the aging process are deeply interconnected and their interdependences are not easy to detect. The kinds of agricultural activities and their productivity depend on natural factors (climate, physical characteristics, precipitation, soil quality, etc.) as well as on social ones.

Older farmers are not necessarily less productive. The level of their efficiency depends not only on age, but on external circumstances such as the level of

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technological development (Stloukal, 2000). In general, developed countries of the world have to deal with more serious aging issues than do developing countries. Namely, among the world's countries listed by median age, mainly developed European countries show a medium age over 40, e.g. Belgium - 41.7; Austria - 42.2; Finland - 42.1; Italy - 43.3; Germany - 43.8; and Monaco - 45.7 (Central Intelligence Agency, 2009). In contrast, developing countries in Asia, South America and Africa have very young populations measured by median age: Afghanistan - 17.6; Algeria - 26.6; Bolivia - 21.9; China 34.1, etc. (ibid.). Lately, however, aging is becoming a focal point in developing countries too. Thus, Croatia (41.0), Ukraine (39.5), Bosnia and Herzegovina (39.8) and other developing countries have aging populations (ibid.). Serbia, with a median age of 41.0, belongs to this group, too.

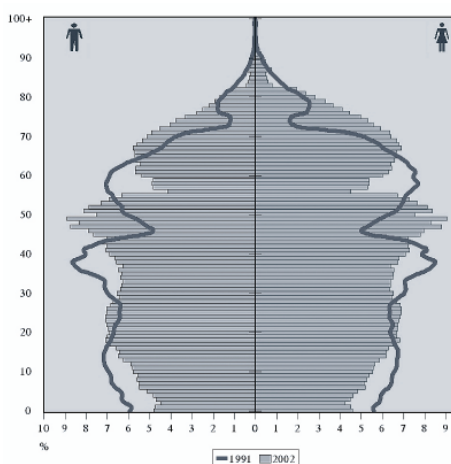
It has been noted that the types of agricultural activities (intensive, extensive, live stocking, cropping, fruits growing etc.) depend on geographic location while population outflow from rural to urban areas depends on type of agricultural activity. Thus geographic location influences demographic structures. The chances of finding the same aging process in geographically different regions are least likely. Therefore, in order to understand different aging structures, it is important to analyse their spatially differentiated contexts.

Regions differ by socio-geographical characteristics: social organisation, cultural patterns, strength of economic cooperation and practices of agricultural production. It is well known how much priorities and efficiency in state policy implementation influence migration. In American society, for example, poverty differences between classes, nationalities and races are obvious (Tarman, 2009). Some regions prosper successfully owing to cooperation with other regions, while others economically degrade because of closed economies, and accomplishments in agriculture depend on the farmer's openness towards innovation. Obviously, ethno-geographic characteristics play a part in the creation of differences between regions and the behaviour of the people living there.

Serbia is among the ten countries in the world with the oldest citizens, and it is currently the state with the highest number of refugees in Europe, taking the 13th place in the world (Vujošević et al., 2009). In the 90s, demographic analyses by all criteria of aging showed that the population of Serbia is in the

process of aging (Penev, 1999). These analyses were based on a comparison of regions (Vojvodina; Central Serbia; and Kosovo and Metohija) and/or municipalities (Rančić et al., 1990; Penev, 1999). This included analyses of the aging of rural and urban populations (Rančić et al., 1990), using a socio-demographic approach. Malobabić and Bakić (2003) argue that the aging process in mountainous areas of Serbia indicates an increasing share of elders in the total population. Nikolić (2003) suggests a problem of depopulation from mountain municipalities, particularly characterised by an outflow of the young population. Additionally, this author mentions parallels between lowlands and mountainous areas in Serbia, but rather concerning the number of members within a household and the structure of agricultural land. Therefore, it appears that, even though rural aging and agricultural potentials have been analysed in general, the particular focus on the relationship between the aging process and agricultural production has not been analysed in parallel. In addition, administrative units (autonomous regions and municipalities) were used for comparison, without the geographic context of lowlands and mountains.

Aging indicators such as the number and percentage of aged (over 65) in the total population, the old-age-dependency ratio and aging index, based on a set of data from Census 1991 and 2002 (SORS, 1991 and 2002), show that the population is getting older. In 2002, all lowland municipalities in Serbia had an aging index under 200, while eight municipalities in mountainous areas significantly surpassed this value.



Graph 1: Age and gender structure – Serbia without Kosovo and Metohija, 1991 and 2002

Source: UNECE, 2007

Causes for Population Aging in Rural Areas

Population aging is only one dimension within the complexity of demographic change. Rural and urban areas possess their own unique features of demographic transition. However, the causes of population aging in rural areas could be natural (biological), social or both natural and social at the same time.

Referring solely to the second half of the 20th century, life expectancy at birth has increased (Peters, 2008) thus effecting the overall population age structure, in rural areas as well. Fertility and birth-rate decrease are biological factors that also contribute to population aging in villages. As is common in demographic transition, mortality rates have also decreased, simultaneously with the above-mentioned processes; thus providing an increase of the aged population (Stloukal, 2000).

Another overall demographic process is the decrease of the mortality rate. The process among the rural population is the same as in urban areas in some ways, but unique in others. Namely, the aging of farmers is more intensive than in other occupations in spite of the fact that the mortality caused by the nature of agricultural activities (external reasons) is much higher (NIOSH, 2004). This is a consequence of the fact that there is no age limit for farmers to be retired, and they are engaged in agricultural activities as long as they are fit for any kind of physical activity; therefore, the risk of injuries and death at work is higher than in other professions (Fullerton, Toossi, 2001).

Beyond the natural (biological) causes such as an increased life expectancy and a mortality decrease, it is considered that the dynamical component (migration) is the greatest reason for aging within the rural population. The number of young people remaining in villages decreases, and those who are eager to come back are few; therefore, the increase in the aged population is mainly not a consequence of an increase in older farmers but of the younger generations going away (ANRA, 2008). Migrations, or more precisely – emigrations, are principally a one-direction process: village – city. Young people are leaving, thus “shortening” the base and the middle of the population pyramid. At the same time, in most mountainous areas in Europe those who return are mainly old people, already retired in the city (European Environmental Agency, 1999; Stloukal, 2000).

Expected earnings and quality of life, as social causes, influence both the emigration of young generations from rural areas and the return to the villages of nearly only those who have already finished their careers.

Such demographic change carries substantial effects on future social demands on agricultural landscape use and thus on rural areas. Thereby, it is defined as both the decrease of the population and the shift in the age distribution ("aging") and in the spatial distribution ("outflow from rural areas" particularly of young people) (Müller et al., 2008).

While the impact on the social security systems and related issues are central in the research interests of demographic change, only a few scientists have actually looked at its consequences on the demands on agricultural landscape use (Kujath, Schmidt, 2007 according to Müller et al., 2008). Three dimensions of relations between demographic change and agricultural activities are apparent in Serbia:

- population aging: in Serbia as a whole, the young population (0-14 years) share decreased from 20.2% in 1981 to 15.9% in 2002, while the old population share increased from 10.3% to 16.4%. In the lowlands, during the time between the two censuses, the share of young people decreased from 19.9% to 15.4% and the share of old people increased from 10.3% to 17%. The same trend is apparent in mountainous areas of Serbia where the share of young people decreased from 20.7% to 16.6% and the share of old people increased from 10.4% to 17.3%;
- population decline: between the two censuses, the total population share decreased by 0.6% in lowlands and 3.7% in mountainous areas³;
- migration: although a significant and evident phenomenon, Serbian statistics do not measure it sufficiently. Social causes are crucial to this phenomenon. After World War II, the Serbian government and the governments of ex-Yugoslavian federal republics intensively favoured industrialisation, which caused accelerated urbanization. Investment in favour of cities, in other words an urban-centric policy (Petovar, 2003), was systematically

implemented and caused a marginalisation of rural areas and agricultural activity, destroying the economic independence of rural dwellers, eliminating agricultural cooperatives, and limiting a farmsteads maximum⁴.

POPULATION AGING IMPACTS ON AGRICULTURAL ACTIVITIES IN RURAL AREAS

The consequences of population aging can be various: economic, social, social-economic, natural etc. Nevertheless, it is always useful to keep in mind that population aging can also be a consequence. While most consequences bring negative impacts, it is very important to locate any positive implications, if possible.

The first implication, most often, is a decrease of flexibility in the agricultural labour market. Additionally, there is an expectation that older farmers are less motivated to invest in innovation because of the shorter amortisation period left in their lives to experience full advantage of it. In another words, serious changes in the characteristics of agricultural activities are expected to be influenced by the population aging (Stloukal, 2000).

A median age increase does not necessarily have to come with an increase of the older population. As example from Australia shows, the median age increases even if the number of older farmers (over 50) is more or less the same as it used to be a few decades ago. The cause, in fact, is that the number of younger farmers (15-50 years old) has decreased rapidly (ANRA, 2008).

The population aging process depends on certain factors as well: population density, the age and professional population distribution within different economic activities, economic productivity, accessibility of new technologies, innovations, and social and economic policies, too (Stloukal, 2001).

The older a farmer is, the probability of being open to investments and innovations diminishes (Stloukal, 2000). Often, there is no perception of possible innovations, and even if these farmers follow contemporary trends that lead to greater effectiveness in production, they do not consider themselves as investors. That is due to short amortisation time and an overall

shortage of finances that are not likely to pay off. In the end, conducting agriculture is an expensive investment with low benefits. Therefore, the issue of land ownership for future generations is certainly a challenge (UDAF, 2000). Looking further into the next decades at the increased number of aged farmers (over 65) leads to the conclusion that the land will be left without anybody to take proper care of it (Stloukal, 2000).

What happens with agricultural land after its owners come to an age when they are not able to cultivate it anymore? There are only few basic possibilities: the land will remain with its original owners, starting a degradation process; the land will remain with its original owners but its use will change (e.g. forested); the land will be sold to an owner with no interest in keeping it for agricultural activity (followed by land-use change); or the land will be sold to an owner who is not interested in changes in land use and will continue its cultivation.

One of the socio-economic issues is a lack of working places when there is no need for new employees. The increase of the aged population in villages increases needs for a new work force, particularly those who are specialised in taking care of the elderly (Stloukal, 2000). Nursing homes, health services, the strengthening of mobility and accessibility, etc; all of these require a range of new positions in the work force – from low-qualified to high-qualified.

PROBLEMS OF RURAL AREAS IN SERBIA

Rural areas in Serbia cover about 85 % of its territory, in which more than half of its population live (Table 1). Unfortunately, the currently achieved socio-economic development in Serbia has not resulted in a consistent and long-term rural development policy.

Part of the planning solutions for further regional development in Serbia is based on economic prosperity, development and improved living conditions in rural areas, the maintenance and promotion of rural values, a strengthening of the the economic position of agriculture and agricultural producers, developing infrastructure and raising utility and public standards in villages. Agriculture, depending on the availability of agricultural funds, with the traditional dependency of local population on agriculture as an economic

³ It is also apparent that the number of mountainous settlement with 100 dwellers has multiplied 11 times in the span of 40 years (see more in: Malobabić, Maričić, 2004).

⁴ Agrarian reform (1945 and 1953) aimed to eliminate large farmsteads and at first appointed a farmstead maximum of 35 hectares, and then of 10 hectares per agricultural producer.

Table 1. The main characteristics of rural areas in Serbia compared with urban areas

Indicators	Serbia total	Urban areas	Rural areas	% of rural areas in Serbia	EU 25 rural areas
Total area (km ²)	77508	11556	65952	85.1	56.2
No. of settlement	4715	811	3904	82.8	
Population in 1991	7576837	3257374	4319463	57.0	16.6
Population in 2002	7498001	3336341	4161660	55.5	
Population density 2002	96	288	63		38.5
Changes in population number (1991-2002) in %	-1.04	2.42	-3.65		
Aging structure					
65+ (%)	16,5	15,4	17,5		16.6
Below 15 (%)	15,7	15,1	16,2		17.6
Employment in sectors					
Primary (%)	23,36	11,26	32,98		13.2
Secondary (%)	30,08	29,32	30,69		28.7
Tertiary (%)	43,74	56,74	33,44		58.1
Unknown	2,80	2,69	2,89		-

Source: MAFWM (2009), Strategy of rural development - draft version

branch and development of agri-industrial capacities, represents one of the most important developmental resources (Maksin-Mičić et al., 2009).

Nevertheless, rural areas in Serbia are characterized by several crucial features:

- negative demographical trends: rural areas before the 1990s were characterized by strong emigration trends caused by agrarian exodus, as was the case in other European countries in the 1950s. In the same period, rapid growth and development of other commercial sectors occurred. During the 1990s rural population outflow, mostly from mountainous areas, continued, but at the same time, a large displaced population (a consequence of the wars in Croatia, Bosnia and Kosovo) arrived and settled there.
- high employment in the primary sector – about 1/3 of the active population is employed in the agricultural sector, which points out the great importance of agriculture in the national economy and to the low degree of diversification of commercial activities in the rural areas of Serbia. Agriculture is the main activity in most rural areas and is characterised by small agricultural farms, a low productivity rate and low income per farm.
- decrease of arable land: mostly a consequence of extensive utilization of agricultural land and various degradation

processes caused by man and nature; therefore, the problem of rural development needs to be stressed as a matter of losing a main resource - agricultural land.

Depending on regional differences in geographical and social means, the aging process can be distinguished. A comparison of aging indicators for lowlands and mountains shows that the values for higher altitudes are higher than those in altitudes closer to sea level. The Table 2 presents a distribution of those indicators within the span of approximately 20 years.

The average age distribution in Census 2002 (SORS, 2003), adjusted to average values of lowlands and mountainous areas, testifies considerably that population the aging process of the population has developed further in higher altitudes: 40.6 in lowlands and 41.5 in mountains (Table 3).

A United Nations organisation is conducting an agricultural census, recognizing its relevance in gathering data and following the connections between aging and agricultural activities (Stloukal, 2000). Based on those data, the conclusion is that the type of agricultural activity depends greatly on the age distribution of farmers. Namely, farmers are almost inevitably divided so that the younger ones prefer live stocking and fruit-growing while the older ones are oriented towards crop farming and vegetable-growing but are also mainly active in mountain areas (ibid.). The question, therefore, is whether the population aging process is more serious in the mountains than in the low-lands?

CASE STUDIES

The Indija and Knjaževac Municipalities have been chosen to show relations between geographically different regions in Serbia's lowlands and mountains (Map 1). The essential difference between the cases chosen for this paper is topography. The Indija Municipality is located in the flat area of the Pannonia plane, while the Knjaževac Municipality belongs to mountainous Serbia and embraces the eastern parts of Stara Planina Mountain. Owing to different

Table 2: Aging Indicators in Lowlands and Mountainous Areas of Serbia

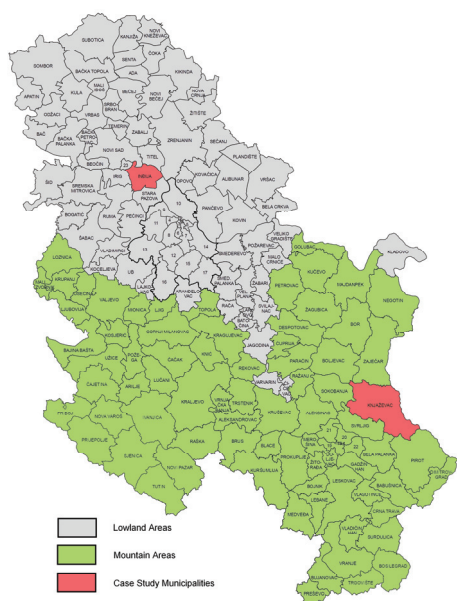
	Lowlands		Mountainous Areas	
	1981	2002	1981	2002
65+	459,961	698,277	347,533	534,893
65+ (%)	10.3	17.1	10.4	17.3
Old-age-dependency ration	14.9	23.0	15.5	26.0
Age index	51.8	102.6	50.4	104.0

Source: Calculated from Statistics (SORS 1981, 2002)

Table 3: Indicators related to agricultural activities in Lowlands and Mountainous Areas of Serbia

	Lowlands		Mountainous Areas	
	1981	2002	1981	2002
Average population density	138.1	136.3	73.9	68.5
Agricultural population (%)	16.4	9.2	32,5	13,1
Agricultural area (%)	82.3	79,5	57,3	55,9

Source: Calculated from Statistics (SORS 1981, 2002)



Map 1: Study Areas and Case Study Municipalities – Indija and Knjaževac

* Serbia is shown without Kosovo and Metohija

topographical conditions, but also to different historical and ethnic surroundings, considerable dissimilarities emerged in the sphere of demographic structures and agricultural production. Knjaževac Municipality covers an area of 1,202 km² and its countryside is mostly hilly and mountainous. Indija Municipality covers an area of 384 km² and its relief is characterized by the slopes of Fruška Gora Mountain in the north and fertile plains in the southern part of the territory.

Demographic Analysis

Analysing demographic indicators related to the aging population, differences between the chosen case studies are obvious. The first and very characteristic difference is a trend in total population which has decreased within the span of 20 years (1981–2002) in Knjaževac Municipality and increased in Indija Municipality. At the beginning of the 1980's, Knjaževac Municipality was populated by 48.789 inhabitants, which was approximately the number of inhabitants in Indija Municipality two decades later (Graph 2).

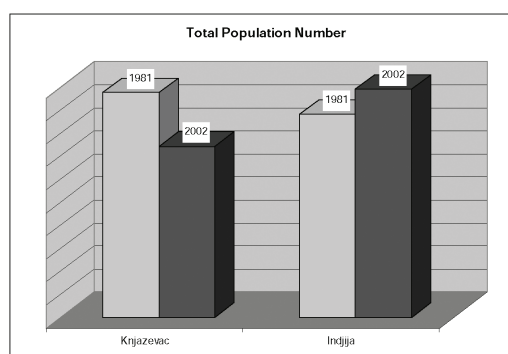
As expected, Knjaževac Municipality depopulation indicates an aging process too, not only a decrease of population. Namely, the old-age-dependency ratio and aging index in both municipalities has increased, but more so in the mountainous municipality. The number of inhabitants over 65 has increased more in the Indija Municipality, but if shown in percentages,

the participation of older segment has increased in Knjaževac Municipality even more. This is a result of the higher increase in population in the Indija Municipality which shows an increase in the number of elderly as well (Graph 3).

The percentage of elderly (65+) in total population increased by 8% in Knjaževac and by 6% in Indija Municipality; however, considering the value of elderly participation (not the intensity of its change within the span of 20 years), the situation in the mountainous municipality is much more serious. In 2002, the percentage of the older population in Knjaževac Municipality was almost double than of the Indija Municipality. Increasing process of population aging and almost one third of the population in the elder age are genuine concern and challenge for the future (Table 4).

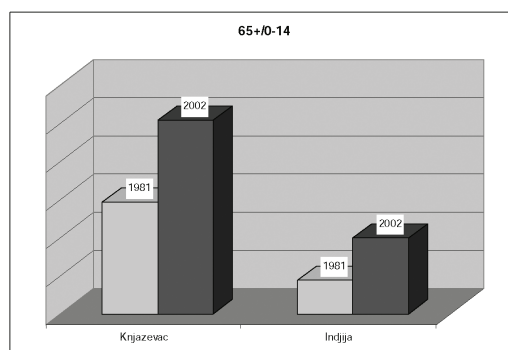
With regard to the future, it is necessary to “read” the aging index, which explains how many individuals in the younger generations will replace the old in five decades. When just the intensity of change is compared, the index increases twice as much in Knjaževac than in the Indija Municipality. Additionally, the aging index values shows that the number of old is twice that of the young (0–14) in the mountainous municipality, while the lowland municipality still has more young inhabitants than old.

In terms of economic activity, the (dis)balance between the old and working populations (15–64) has also changed contrary to what is auspicious. Again, the facts show a much more serious situation in Knjaževac Municipality: an increase of old in total population in percentages is twice as high in 2002 than in 1981 and the share of the old population is twice higher than that of the working population, too.



Graph 2: Change in Total Population Number

Source: Calculated from Statistics (SORS 1981, 2002)



Graph 3: Change in Old-Age-Dependency Ratio

Source: Calculated from Statistics (SORS 1981, 2002)

Table 3: Aging Indicators in Knjaževac and Indija Municipality (1981, 2002)

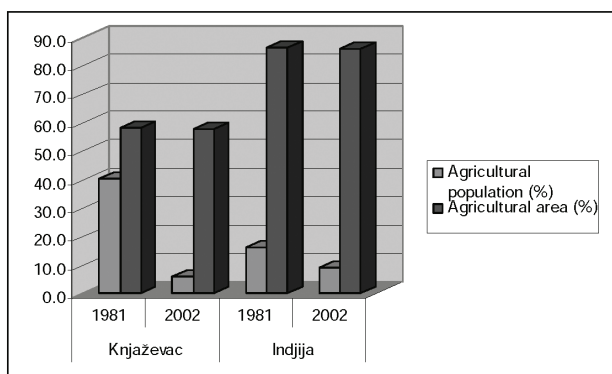
	Knjaževac Municipality		Indija Municipality	
	1981	2002	1981	2002
Total population	48.789	37.172	44.151	49.609
65+	9.631	10.248	4.134	7.729
65+ (%)	19.7	27.6	9.4	15.6
Old-age-dependency ratio	29.7	45.4	13.5	22.9
Age index	146.1	253.8	43.7	99.2

Source: Calculated from Statistics (SORS 1981, 2002)

Agricultural Activity Analysis

When indicators related to agricultural activities for both municipalities are compared, different conclusions can be reached. Although both municipalities, according to OECD criteria on population density, are rural, the difference between population densities of the two municipalities is significant; the lowland municipality is over four times more populated. That presence is not related only to the immigration process into the Indija municipality, although after the turbulent processes in the ex-Yugoslavian region in the 1990's, the Indija municipality has been populated by a lot of refugees⁵.

Although there was not a large change in the total agricultural area in the period between the two censuses (Graf 4 and Table 4), the situation within the agricultural population is remarkable. While the share of agricultural population in 2002 in the Indija Municipality decreased by 7.1 % compared to 1981, in the Knjaževac Municipality that share decreased more than seven times.



Graph 4: Change in Agricultural Population and Agricultural Area

Source: Calculated from Statistics (SORS 1981, 2002)

Table 4: Indicators related to agricultural activities for Knjaževac and Indija Municipality (1981, 2002)

	Knjaževac Municipality		Indija Municipality	
	1981	2002	1981	2002
Average population density	41	31	115	129
Agricultural population (%)	40.3	6	16	8,9
Agricultural area (%)	58.3	57.6	86.2	85.7

Source: Calculated from Statistics (SORS 1981, 2002)

⁵ According to the Republic of Serbia Commissariat for refugees Census, in 2001 the Indija Municipality refugee status showed 10,113 persons; after the refugee status revision (2005), the Indija Municipality had 4,321 internally displaced persons (Source: LAP, 2009)

Relation between Population Aging and Agricultural Activity

In addition to the quantitative analysis, a qualitative analysis for both case studies was conducted, too. A questionnaire, conducted in July 2009, contained open-question structure and was divided into the following three topics: awareness of local government of population aging in the decision-making process; impact of population aging on changes in economic and agricultural activities; and the impact of population aging on land-use change. The case studies were chosen based on following criteria:

- Opposite cases with regard to:
 - Geographic location and characteristics;
 - Spatial relation to functional urban areas (FUA) defined in the Spatial Development Strategy of the Republic of Serbia (2009);
 - Trend in population increase;
- Similar cases with regard to:
 - Good information accessibility;
 - Areas of strategic importance.

regard to its functional relations to centres of FUA. In contrast, Indija is located in overlapping areas of the two biggest FUA – Belgrade and Novi Sad (MESP and RASP, 2009). Another contrast between case studies is the population decrease in all settlements of Knjaževac and only one settlement in the Indija Municipality (SORS, 2004). Also, Knjaževac is one of the municipalities in this mountain area with the oldest population (average age 47.3), while Indija instead belongs to a group of “younger municipalities” in the lowlands (average age 39.7) (SORS, 2003).

Additional criterion in case study choice was good information accessibility, more precisely interviewees open to providing relevant information. Due to the projects and plans developed for area of Stara Planina Mountain by IAUS since 1974, stable and open cooperation with local government and project associates was significant in the choice of interviewees for this paper. As Indija is lately one of the most successful municipalities with regard to development in Serbia, chiefs of several departments were also highly motivated to share information on the demographic and economic changes they had been through. Finally, both Knjaževac and Indija Municipalities are of strategic importance in the further spatial development of Serbia. Knjaževac is included within the Stara Planina Spatial Plan for Areas of Special Purposes (IAUS, 2009) and in the Master Plan of Tourism Development on Stara Planina (Horwath Consulting, 2008). The successful development of Indija and its location within two FUA makes it an example of good practice and a potentially very prosperous area in Serbia.

Interviews in the Knjaževac Municipality were conducted with the chief of the Department for Urban Planning, Communal Services and Inspection and two associates on the Stara Planina projects. In Indija, interviewees were from Municipality Governance - Department for Urban Planning, Communal-Housing Services and Environmental Protection (1); Department for Economy and Local Economy Development (3); and from the Agency for Rural Development (1).

In the planning process, both case studies treat population issue in a similar way. Plans and strategies put economic development in first place and consider that these kinds of improvements stimulate people to stay or even come back, indirectly influencing population aging. Also, both Municipalities are aware that

population aging is a consequence of long-term emigrations within young generations where losses are especially reflected on human capital. However, the Knjaževac Municipality perceives aging as a more relevant issue than depopulation, while in the Indija Municipality the reverse is true.

In both case studies it is evident that population aging influences economic activities to decrease rather than to shift to another activity that is less labour intensive. Nevertheless, in agriculture, considered a primary activity in both the Knjaževac and Indija Municipalities, there is selection and certain types of cultivation where the physical requirements are higher are avoided. It is clear that the reasons for this lie in the aged population structure.

On the one hand, the negative impacts of population aging are recognised in the Knjaževac Municipality because they have led to shortages in the working population (labour). On the other hand, refugees, which have assimilated with the autochthon population and are now a part of the working population, stimulate agricultural production in the Indija Municipality, which could be considered a positive impact. Still, in this lowland case study, villages with no tendencies to become urbanised or to increase agricultural production have seriously fallen into the aging process. Local attitudes (ethno-geography) are named as a main reason.

Regarding changes in land-use, both similarities and differences between mountainous area and lowlands have been identified. Namely, one similarity is that processes of resizing parcels of land to be larger or smaller are running parallel, but with different intensity depending on the municipality. The enlargement of parcels is more common for the Indija Municipality because agricultural production is higher and the type of agriculture (cropping) yields better results if cultivation occurs in a larger area. It appears that seeding structure has changed, too. While there is an increase in vegetable and industrial plants production, corns are less present. In the Knjaževac Municipality, the redemption and renting of land is not significant, but even when it occurs, the reason is not linked to traditional agricultural production but with the aim to use that land for tourism activities. Many parcels of this kind have still not achieved its purpose. It does not appear that population aging is causing this parcel enlargement, but one is certain:

changes in land ownership influences the demographic structure. This is because the new owners are mostly people who come from other regions and municipalities.

The process of parcel fragmentation is directly related to population aging. Inherited land is usually divided between children after parents die or even before. In any case, that land is not used for traditional agricultural production or nor used at all and yet is divided into smaller areas. This process is common in both the Knjaževac and Indija Municipalities. Nevertheless, the increase of non-functional farms in the Knjaževac Municipality is greater than the increase of changes in land-use, wherever population aging is the main factor.

CONCLUSIONS

After an increase induced by immigration during the 90s (following intense migration of refugees from the former Yugoslavia), the Indija Municipality has mainly considered depopulation as an aspect of demographic change. The situation in the Knjaževac Municipality has been different, and the more relevant issue regarding demography is population aging.

Economic activities, especially in the short term, have been shown to change mainly when stimulated by policies and programs of the State Government and spatial plans. Change in the case of the Indija Municipality relates to the type of agricultural activity (e.g. a shift from fruit production to live stocking), while the Knjaževac Municipality streams towards tourism. However, those changes have little to do with population aging. Population aging affects intensity of agricultural activity.

Measures and policies with regard to population aging in rural areas could be initiated in more fields of action. In the same way, measures and instruments to lessen negative consequences of aging, as well as prevention from aging, suggest various actions, if practically implemented.

Agricultural activity was the primary activity in Knjaževac Municipality, but population aging caused a decrease of the work force. When there are not enough people to conduct this activity, agriculture lose the importance it used to have. In the Indija Municipality, agricultural production has been maintained at a high scale.

In the case study of the mountainous area, aging caused a decline of the work force that

left repercussions on land-use. A significant number of agricultural parcels have become meadows, brushwoods or woods. In the lowland case study, intensive agricultural activity prevented land from being deserted; in the Indija Municipality, the conversion tendency is from agricultural parcels to building-land.

The paradox is that the mountainous example shows the greater level of decreased autochthon activity, while, at the same time, investors from other regions and municipalities are the most interested in buying this land. In any case, this land will not be used for agricultural production anymore.

Unfavourable relations between population aging and agricultural activities are more pronounced in the mountainous than in the lowland case study. Namely, more intense aging and worse geographical conditions for agricultural development brings about that process where parcels become smaller by inheritance; therefore, this process is much more intense in the Knjaževac Municipality, while a reverse process of parcel enlargement is occurring in the Indija Municipality.

In order to avoid irreversible consequences of aging, it is essential to maintain the necessary access to information and awareness of the relationships between population aging and social, economic and natural development. In order to move from knowledge to concrete actions, providing objective scientific information about the specifics of the aging process specifics to decision-makers is of exquisite relevance (Stloukal, 2001). When acknowledgment and information already exist and especially if previous opinion articulated an opposite view, it is extremely recommended to work to change attitudes about measures and instruments. Encouraging the acceptance of innovations, new agricultural technologies and practices are also essential.

Regarding measures and instruments that are the responsibility of government, legislation is one of the options. Laws may regulate the flexibility of farmers to arrange their own activities, regulate the level of benefits they might gain, but define responsibilities that diminish village-city migrations, too.

It is of extreme relevance to be aware that both interviews in the Knjaževac and Indija Municipalities have shown that when the local population is not informed about possible subventions, credits and programs or they are not informed in an effective way, governmental

subsidies are not being used and fail as a tool to discourage emigration from rural areas.

Finally, the following action fields were identified as those where measures, instruments and policies dealing with population aging are relevant:

1. Information and data collection (e.g. agricultural censuses);
2. Dissemination of information, data and awareness (e.g. seminars);
3. Change of previously adopted attitudes and actions (e.g. marketing, workshops);
4. Adoption of innovations, new technologies and practices;
5. Legislation; and
6. Spatial and socio-economic planning.

What role does the Serbian Government have in this issue? The National Strategy on Aging 2006-2015 of the Republic of Serbia is conceptually harmonized with the Recommendations and Obligations of the Madrid International Action Plan on Aging (2002) and the Regional Strategy in relation to its implementation, ratified by the UN Economic Commission for Europe, as well as with the Poverty Reduction Strategy of the Republic of Serbia (2003). With the adoption of the National Strategy on Aging (2006), the phenomenon of aging is promoted on the national level as a factor of all Serbian governmental sector policies. The first strategic direction in this document is to animate the integrative process adaptation to the social and economic consequences of aging. In 2005 the Serbian government adopted the Millennium Development Goals Report, which is supported as a priority in Strategy on Aging. One of strategic actions stressed in this Strategy is to reach an economic development redistribution. The main goal of economic development is an economic growth rate acceleration through a transition process that recognizes the negative social consequences of transition mitigation with regard to population aging consequences. Some of guidelines are: promotion of just and sustainable development; adaptation of the labour market to accommodate the social and economic consequences of population aging (where the priority is to reduce the unemployment level, for both men and women, above the age of 45); the encouragement of lifelong education which is an essential precondition for participation of the older population in the labour market (UNECE, 2007).

The Poverty Reduction Strategy Implementation Team has recognized the significance of rural development for poverty reduction. Analysing budgetary support to agriculture and rural areas in Serbia over the period of 2004-2008 it is evident that the main problem is that similar measures are reiterated in different manners, but the effects are apparently missing.

Clearly all strategies related to rural development, agricultural activity and the aging population must be coordinated. Without that approach in the planning process, the sustainable development of rural areas as a whole will not be possible in Serbia.

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