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EVALUATION OF SOCIAL SUSTAINABILITY OF AGRICULTURE WITHIN THE CARPATHIANS IN THE REPUBLIC OF SERBIA

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Abstract

By transition process, which is presented in the Republic of Serbia for many years, rural areas are also covered in great extent. Changes in national agricultural policy, in terms of orientation towards rural development and multifunctional agriculture, have led to situation that process of development must involve all stakeholders, from governmental institutions, via local community, to population of rural areas. Such approach to rural development could initiate easier integration into international institutions and European Union, as well as to strengthening of cross-border cooperation within the mentioned area of economy. The most part of the Carpathians in the Republic of Serbia is taken by the national park „Đerdap" and its protected zone. Within the mentioned protected area, sustainable use of agricultural land is based on traditional system of mountain agriculture that provides a high degree of ecological rationality and represents a very good foundation for development of integral and organic production. Opening toward the international community and peculiarly clear commitment of Serbia to European integrations, requires a new definition of role and importance of agricultural sector. Therefore, it is estimated that now is the perfect time for establishment of concrete conceptual framework and Strategy that will answer to key questions within the agro-food sector. In this context, authors' intention (they are also the members of the research team of IAE Belgrade which is the holder of the project III 46006 - Sustainable agriculture and rural development in function of Republic of Serbia strategic goals achievement within the Danube region) is to evaluate a social sustainability of agriculture in the area of the Carpathians in Serbia. Because of that, research is focused to administrative area of next municipalities: Golubac, Kučevo, Majdanpek, Kladovo and Negotin. Considering microeconomic character of research, it was used the original methodology , which could be useful for each area within the Danube region, providing the significant benefit to public administration and management during decisions-making process. At a given moment, by the authors' methodology, which covers the next criteria: density of agricultural population, density of active agricultural population and density of employees in agriculture. Based on this, it could be established the accurate diagnosis for chosen area, joining the estimation for each set of criteria that fits to the goals of sustainable agriculture in the Danube region.

***Key words*:** *agriculture, Serbia, social sustainability, the Carpathians*

INTRODUCTION

In its original context, sustainable development is related to the natural sciences, or clearly, to management of natural resources in a way that ensures the preservation of their reproductive abilities. Depletion of natural resources, growth of environmental pollution, erosion of biodiversity, etc., are forcing the thinking about current developmental model, in other words to try to produce today, without prejudice to the right of future generations to meet their own needs (Subić et al., 2005). According to previous definition, it is imposed a need of agriculture re-adaptation toward sustainability and multifunctionality.

Sustainability of agriculture is defined as "*development that allows the preservation of land, water, plant and animal resources, which is environment-friendly, technically applicable, economically profitable and socially acceptable*" (FAO, 1989).

Starting from the fact that sustainable agricultural and rural development, by rule, does not have certain carrier of the development (as specific business entity), complexity of sustainable rural development is connected to interests of larger number of economic and other subjects, as well as all local interested citizens. Holder of driving force for sustainable agricultural and rural development should be the government, which is through its territorial and departmental authorities only competent for

initiation, implementation and management of concrete territories development.

Participation of all local community representatives in identification of opportunities they have on disposal, as well as in identification of priorities important to themselves, are the key elements necessary for establishment of appropriate sustainable development strategy.

By adequate training, according to scientific-research methods used for: identification of all advantages and disadvantages that are on disposal to community, selection of priorities and strategic planning, representatives of local communities will be able to contribute to faster development of agriculture and better life conditions in rural areas. Sustainable agricultural and rural development of mentioned region significantly contributes to sustainable rural development at the national level, as in whole society.

Agriculture and rural areas in the municipalities of the Carpathian region (Golubac, Kučevo, Majdanpek, Kladovo and Negotin) within the Republic of Serbia, in other word policy of sustainable development of agriculture and rural development are faced important challenges in upcoming long-term period. In last twenty years come to some large changes within the political frame and macroeconomic relationships which were reflected on other aspects of life and business in Serbia. Momentum of market economy and market principals certainly had an impact on agro-food sector, which is the most sensitive and by its nature very specific.

MATERIALS AND METHODS

Having in mind the multifunctional characteristics of agriculture, FAO creates the following definition: *"Agriculture, which has a primary role to produce food and to contribute to food safety, has also different ecological, economic and social functions"* (FAO, 1989). "*Various functions of agriculture refer to its nature"* (Pingault, 2001).

Different functions of agriculture are certainly closely related, so it is not very easy to draw a correct line that will divide them. According to that, here is a short review on three basic functions of agriculture (Subić et al., 2005):

-*economic function* is reflected through the activities that take place in rural areas, or that are related to employment and income of rural population;

-*ecological function* is connected to the environment protection and improvement, or about impacts (positive and negative) that agriculture has on the environment;

-*social function* includes all social, political, historical and cultural aspects of the agricultural sector and agricultural activities.

In the context of social function, agriculture should contribute to: food security (national and global); rural employment, as well as to unification and stabilization of the total incomes of the rural husbandries; transfer of non-agricultural to agricultural land; preservation of cultural heritage (local customs); improvement of living conditions, according to the norms of each country, etc. (Pingault, 2001).

In order to simplify the estimation of social sustainability of agriculture in the Carpathians within the Republic of Serbia, applied methodology was based on following indicators:[3]

-Density of the total agricultural population (*represents a proportion of the total agricultural land in use and total agricultural population*);

-Density of active farmers (*represents a ratio between total agricultural land in use and total number of active farmers*);

-Density of total number of employees in agriculture (*is a ratio between total agricultural land in use and total number of employees in agriculture*).

Method for the assessment of the social sustainability of agriculture within the Carpathians could be applicable in any other area in the Republic of Serbia, but also in any area within the Danube region as a whole.

RESULTS AND DISCUSSIONS

For obtaining more realistic assessment of social sustainability of agriculture in the Carpathians

[3] Authors inspiration for indicators creation was found in IDEA methodology - Indicateurs de Durabilité des Exploitations Agricoles (Louis, 2003).

within the Republic of Serbia, indicators for both, regional and national level were used.

In accordance to available data sources, calculations under selected indicators refer to 2002 and 2011 (*Table 1.*).

Table 1. Density of agriculturalists by engagement and territorial affiliation

Description	Republic of Serbia		Central Serbia		Carpathians	
	2002	2011	2002	2011	2002	2011
Agricultural land in use - total	5.106.900	5.096.267	3.323.725	3.315.679	169.919	148.949
Agricultural population - total	817.052	-	601.905	-	19.479	-
Density of agricultural population (ha/ap)	*6,25*	-	*5,22*	-	*8,72*	-
Agricultural land in use – total	5.106.900	5.096.267	3.323.725	3.315.679	169.919	148.949
Active agriculturalists – total	529.236	-	403.730	-	13.577	-
Density of active agriculturalists (ha/aca)	*9,65*	-	*8,23*	-	*12,52*	-
Agricultural land in use – total	5.106.900	5.096.267	3.323.725	3.315.679	169.919	148.949
Employees in agriculture – total	71.487	34.815	27.414	14.152	774	402
Density of employees in agriculture (ha/ea)	*71,44*	*146,38*	*121,24*	*228,48*	*219,53*	*370,52*

Source: *Popis stanovništva u Republici Srbiji 2002,* Statistical office of Republic of Serbia, Belgrade; *Opštine u Republici Srbiji 2003,* Statistical office of Republic of Serbia, Belgrade; *Opštine i regioni u Republici Srbiji 2012,* Statistical office of Republic of Serbia, Belgrade.

Based on obtained results, it could be said that the best social sustainability reflects the indicator density of agricultural population at the level of Central Serbia in 2002 (5,22 hectares per agricultural inhabitant), while the worst social sustainability shows the density of total number of employees in agriculture at the level of the Carpathians in 2011 (370,52 hectares per employed person in agriculture).

Considering the social sustainability, it could be said that agriculture, on the level of Carpathians within the Serbia, gives the lowest contribution to:

-food safety,

-rural employment and equalization and stabilization of total income of rural households,

-transfer of non-agricultural into the agricultural land,

-preservation of cultural heritage (local customs),

-improvement of life conditions, etc.

On the other side, by observation of the agriculturalists' density in 2011 in compare to 2002, gained results show a density of totally employed in agriculture in next proportions:

Republic of Serbia (2,05:1), Central Serbia (1,88:1), Carpathians (1,69:1).

So, according to density of totally employed persons in agriculture in 2011 in compare to 2002, on the territory of the Carpathians, agriculture gives the highest contribution to the sustainable social development.

For more realistic estimation of social sustainability of agriculture on local level, methodological procedure is especially focused to administrative areas of municipalities: Golubac, Kučevo, Majdanpek, Kladovo and Negotin (*Table 2.*).

Results from the table above indicate that the best social sustainability is showed by the density of the total agricultural population on the territory of Golubac municipality in 2002 (or 6,23 hectares per agricultural resident), while the worst social sustainability was reflected by the density of totally employed persons in agriculture on the territory of Negotin municipality in 2011 (828,87 hectares per employee in agriculture).

Observing the administrative area of mentioned municipalities, it could be concluded that agriculture within the municipality of Negotin gives the lowest contribution to social sustainability.

If in this case focus is also on the density of agriculturalists in 2011 compared to 2002, it can be seen that the obtained results show the density of totally employed persons in agriculture in following proportion:

Golubac (1,51:1), Kučevo (0,86:1), Majdanpek (1,95:1), Kladovo (1,64:1), Negotin (2,89:1).

Table 2. Density of agriculturalists per engagement and affiliation to administrative region

Description	Golubac		Kučevo		Majdanpek		Kladovo		Negotin	
	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011
Agricultural land in use - total	15.150	13.826	35.165	32.416	20.353	18.549	28.806	21.993	70.445	62.165
Agricultural population - total	2.432	-	3.216	-	2.112	-	2.113	-	9.606	-
Density of agricultural population (ha/ap)	*6,23*	-	*10,93*	-	*9,64*	-	*13,63*	-	*7,33*	-
Agricultural land in use – total	15.150	13.826	35.165	32.416	20.353	18.549	28.806	21.993	70.445	62.165
Active agriculturalists – total	1.586	-	2.143	-	1.673	-	1.441	-	6.734	-
Density of active agriculturalists (ha/aca)	*9,55*	-	*16,41*	-	*12,17*	-	*19,99*	-	*10,46*	-
Agricultural land in use – total	15.150	13.826	35.165	32.416	20.353	18.549	28.806	21.993	70.445	62.165
Employees in agriculture - total	132	80	104	111	152	71	140	65	246	75
Density of employees in agriculture (ha/ea)	*114,72*	*172,83*	*338,13*	*292,04*	*133,90*	*261,25*	*205,76*	*338,35*	*286,36*	*828,87*

Source: *Popis stanovništva u Republici Srbiji 2002*, Statistical office of Republic of Serbia, Belgrade; *Opštine u Republici Srbiji 2003,* Statistical office of Republic of Serbia, Belgrade; *Opštine i regioni u Republici Srbiji 2012,* Statistical office of Republic of Serbia, Belgrade.

Specifically, observing the density of totally employed in agriculture, in 2011 compared to 2002, at the territory of municipality of Kučevo agriculture gives the biggest contribution to the sustainable social development.

CONCLUSIONS

Assessment of the social sustainability of agriculture, which was done according to methodology based on indicators that follow the density of agriculturalists (by their engagement and territorial and administrative affiliation), refers to the influence of presence or absence of some category of agriculturalists on the gained results in agricultural production within the certain area. As agricultural producers contribute to the maintenance of landscape and living space, they can certainly do a number of services that will benefit to the land, economy and society.

Having in mind the social function of agriculture and its influence on the development of economy and society, usage of mentioned methodology could be highly useful for the assessment of sustainable social development within the Carpathians in the Republic of Serbia during the implementation of the production results in agriculture.

Although the presented criteria are fairly simple, methodological procedure and possibility of its wide application provides a good guide to sustainable agricultural and rural development. In this context was established an idea of introduction and use of mentioned methodology, especially within the decision making process connected to social effectiveness in rural areas. On the other hand, there should be left enough space for finding and application of new methods for assessment of social sustainability of agriculture, as well as possibility of free choice in realization of the concept of sustainable agricultural and rural development.

From the aspect of sustainability and multifunctionality, agriculture can be of great importance, both at the macroeconomic and microeconomic level. Consequently, one of the basic principles in preservation and strengthening of social function has to be favouring of variety of ways in development of agricultural husbandries.

Considering the fact that agricultural production alone, as a guarantor of social stability and a source of incomes, loses on its importance, there

is a need that farmers within the Carpathians in Serbia, in some extent, have to look for their earnings in non-agricultural activities, as on husbandry, as well as out of it.

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