3rd International Scientific Conference

31 May - 2 June, 2018
Vrnjačka Banja, Serbia

TOURISM IN FUNCTION OF DEVELOPMENT OF THE REPUBLIC OF SERBIA

Tourism in the Era of Digital Transformation

THEMATIC PROCEEDINGS II

UNIVERSITY OF KRAGUJEVAC
FACULTY OF HOTEL MANAGEMENT AND TOURISM IN VRNJAČKA BANJA

A SHORT SURVEY ON IMPLEMENTATION OF AGRI-ENVIRONMENTAL MEASURES IN ROMANIA AND SOME EU-28 COUNTRIES

Jean Vasile Andrei[1]*; Iuliana Denisa Radulescu*[2]*;*

Abstract

Modern agriculture has become during the years a proactive economic branch, with a traditional impact on European Union economic system and direct implications on creating wealth and stability for the rural communities and assuring the macro-stability as well. The massive transformations of the agricultural system in the recent period have imposed new approaches in valuing the agricultural potential. In this context, the agri-environmental measures represent a new possibility for the agriculture in increasing the value added and reforming the rural communities. The main aim of the paper is undertaking a short survey on some of the influences of the agricultural agri-environmental measures and the agriculture perspectives in the larger context of the green agriculture. It considers the values incorporated in agri-environmental measures for 2013 and targets for 2020.

Key Words: *agriculture, agri-environmental measures, organic farming, crops, agricultural area*
JEL classification: *O3, P28, Q1*

Introduction

The reform of the European agricultural policy has imposed a complex process of rethinking, reasserting and modernizing the European agricultural sector (Andrei and Darvasi, 2012; Ciutacu et al., 2015), while generating ample transformations in the national agricultural sectors of the Member States. Thus, besides the fulfillment of its traditional functions, agriculture must also achieve multifunctional objectives of

[1] Ph.D., Assoc. Prof. habil., Petroleum-Gas University of Ploiești, B-dul Bucuresti, No.39, Ploiesti, Prahova, Romania E-mail: andrei_jeanvasile@yahoo.com
[2] M.A., Constantin Brâncuși University of Targu-Jiu, Faculty of Law Sciences Law, Victoriei Str, No. 24, Targu-Jiu Gorj, Romania, e-mail: dennisa_yuliana@yahoo.com

rural space. Reorienting agricultural policies in the face of their inversion, involves soil protection and judicious exploitation of agricultural land as a prerequisite for strengthening the sustainable productivity of the contemporary.

The participation of the land use owners in promoting agri-environmental measures is usually associated with the less intensive agricultural production systems, where, the financial allocation per cultivated hectare could be lower than the industrial land cultivation system. As are defined in (Uthes and Matzdorf, 2013; p.251), the agri-environment policy measures "provide payments to farmers for voluntary environmental commitments related to preserving and enhancing the environment and maintaining the cultural landscape". (Uthes and Matzdorf, 2013; p.251).

Despite the fact that agri-environment policy measures are perceived in some studies (Bourblanc, 2011; Van Gossum et al., 200) as blockers in farm productivity, and the farmers attraction to the productivist paradigm is higher than promoting such measures, agri-environment measures gain support among numerous farmers

Agricultural agri-environmental measures represent an important policy instrument in redesigning the agricultural policies, during the last decade. Understanding the role of agricultural greening measures in the larger context of the sectorial transformations implies a change of traditional thinking paradigm. In this context, greening the agriculture has become not only an important policy measure, but also a necessity, both on the European Union level, and to the member states. As (Zimmermann and Britz, 2016), reveals in their study, due to their diversity and voluntariness, agri-environmental measures (AEMs) are among the Common Agricultural Policy (CAP) instruments that are most difficult to assess. (Zimmermann and Britz, 2016).

Starting from the reality that agriculture is the economic sector with the highest degree of dependence and equally influence on nature, the relationship between nature and agriculture is a symbiotic one. Agriculture integrates and exploits the land at the same time, exploits the weather conditions and mobilizes an important part of the labor resources in the rural communities.

The relationship between the agriculture and environment is determinant one. In this context the agricultural agri-environmental measures reflect

the intention to mediate the demands for a high agricultural output and the concerns for the environment and the future generations. Contemporary farming practices need to integrate environmental requirements in order to ensure the sustainability of agricultural production systems.

As is reflected in literature (European Commission, 2018), some of the most representative practices and examples of agri-environmental support schemes are centered on:

- promoting organic agriculture and integrated farm management;
- environmentally farming extensification by applying low-intensification techniques;
- preservation of traditional landscape and historical features;
- conservation of high-value habitats and biodiversity.

As (Pacini et al, 2015), argues, in the previous financial work frame of the CAP financial programing, during 2007-2013, and still today, the agri-environment measures have represented an determinant element in highlighting the EU environmental concerns and involvements.

Agriculture influence and contribute in improving the quality of the environment, including by creating adding value, by giving up some of the intensive practices and deepening its social dimension. Practicing mixed crops, adequate soil management or traditional application of fertilizers effectively contributes to reducing the environmental impact.

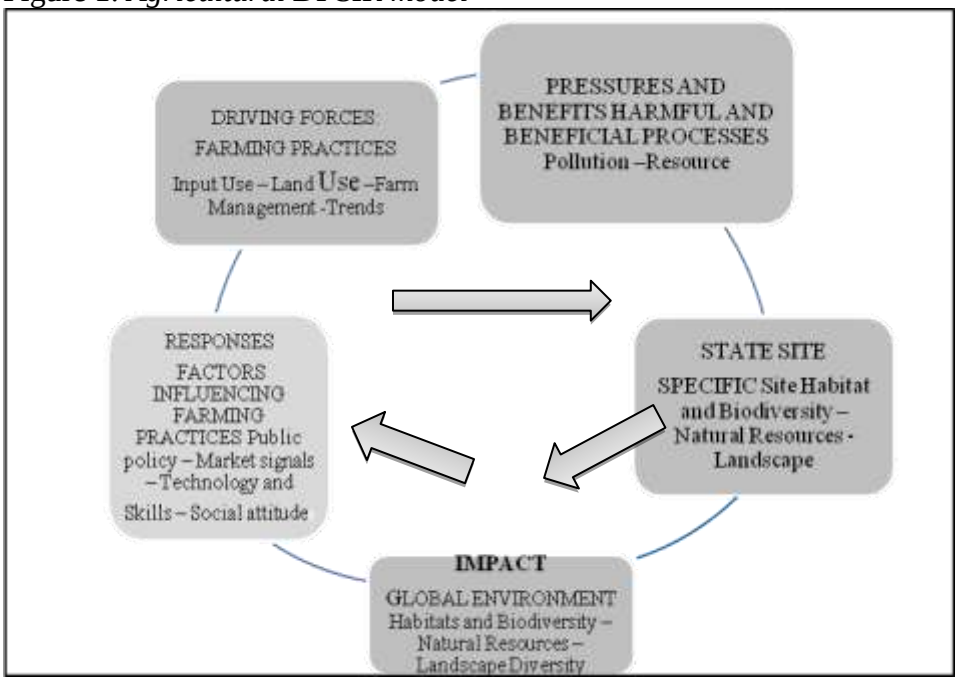
The inclusion and promotion of the agri-environment measures into the Common Agricultural Policy is a key element in strengthening the new European agricultural model. The environmental downturn in agriculture has gained increasing importance during the last policy reforms, against the backdrop of changes in the European agricultural paradigm and of the CAP reform. Understanding the influences of agriculture in shaping the environmental environment has enabled the implementation of proactive policies and measures to aid green agriculture, focusing on respect for the environment and environmentally responsible practices.

As European working documents argue (Comitetul Economic şi Social European, 2008), emissions from agriculture as direct emissions account for 10-12% of the total emissions, with the perspective of 17% to 32% of the total emissions, which will represent 8.5 and 16.5 billion tons of CO2e.(Comitetul Economic şi Social European).

The design of the new financial measures to stimulate farmers for practicing environmentally responsible agriculture was a tool with dynamic sectoral influences and diverse amplitudes in the national agricultural sectors. Encouraging farmers to respect and improve green agricultural practices has led to a reorientation of the agricultural production system.

Financing farmers for providing environmental services within agri-environment measures improves significantly the income support policies for this economic category. Unay-Gailhard and Bojnec (2016) find in their study that farm productivity and capital intensity represents important barriers in adopting and implementing the agri-environment policy measures, especially in the field of dairy and other grazing livestock farms.

Figure 1: *Agricultural DPSIR model*



Source: *Based on European Commission, 2000*

The agri-environmental measures implemented during the policy implementation have reviled the necessity of the agricultural policy effect on the farmer's attitude. In this context, applying the agri-environmental measures implies developing an extensive system of indicators. In order

to identify proper indicators in evaluating the impact of agricultural agri-environmental measures, a five stage model was developed, which manages to capture the essentials, known as the Agricultural DPSIR model (European Commission, 2000), Fig.1.

As could be remarked form Fig.1, a functional model must include all the significant indicators for all the stages involved in the process, respectively- evaluation, impact and results` assessments.

Agricultural land resources status in Romania and in some EU countries

While supporting the possibility of applying soil protection measures and promoting organic farming, agricultural policies must be adjusted to the each EU Member State particularities, without reducing the level of sectoral competitiveness. Implementing agri-environment measures and re-orienting farmers towards environment-friendly practices, also involves a reorientation of the direct payments system under the first pillar of the CAP. The share of the land main type is important in understanding the evolution and the need of agri-environment measures implementation and necessity. In table 1is presented the share of main land types in utilized agricultural area (UAA) in some EU-28, in 2013.

Table 1: *Share of main land types in UAA in some EU-28, 2013*

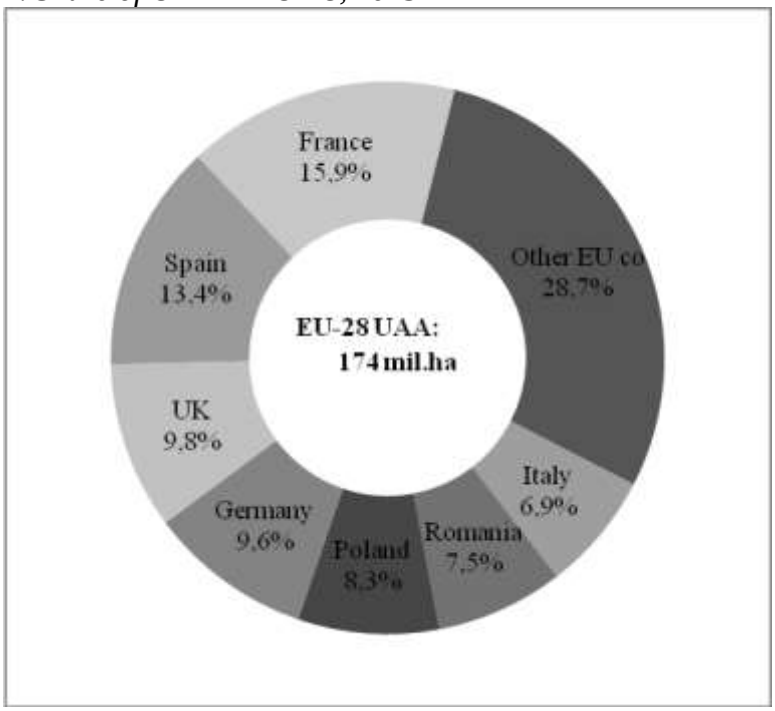
	Arable land	Kitchen gardens	Permanent grassland and meadow	Permanent crops
EU-28	59.8	0.2	34.2	5.9
Hungary	81.6	0.3	15.1	3.0
Lithuania	79.6	0.0	19.6	0.8
Slovakia	71.7	0.0	27.3	1.0
Czech Rep.	71.4	0.0	27.5	1.1
Bulgaria	70.5	0.1	27.3	2.0
Estonia	65.6	0.1	33.9	0.4
Latvia	64.1	0.7	34.8	0.4
Romania	62.8	1.2	33.7	2.3
Slovenia	35.6	0.2	58.6	5.6

Source: *Authors based on Eurostat, 2017*

As in Table 1, the land resource distribution is split in four main categories, which holds different shares and has different influences in shaping the agricultural model. The main important category as share in total land resources is arable land which holds 59.8% share in *EU-28* followed by permanent grassland and meadow with a share of 34.2%. These two categories form the determinant land use pattern distribution in the allocation of financial resources within the CAP.

All the countries presented in the Table 1 holds upper levels of arable land shares, except Slovenia (35.6%). As (Levers et al., 2016; Jepsen et al., 2015) shows "agricultural intensity varies substantially across Europe due to the pronounced differences in environmental conditions, history, ethnic composition, and economic status." (Levers et al., 2016; Jepsen et al., 2015). Fig. 2 shows the structure of UAA distribution in the EU-28.

Figure 2: *Share of UAA in EU-28, 2013*



Source: *Authors based on Eurostat, 2017*

As could be noted from Fig.2, the share of UAA in EU-28 reflects an active concentration of land utilization in case of the European states with developed agricultural sector as: France (15.9%) and Spain (13.4%). Despite the fact that Romania holds an important share of arable land

(62.8%), utilized agricultural area is just of 7.5%, under Poland (8.3%) but higher than Italy (6.9%).

According to the data provided by (Eurostat, 2017) in 2013 the total utilized agricultural area (UAA) in EU-28 was about 174 million ha, which the half of the UAA was concentrated in four countries - France (16 % of the EU-28 total), Spain (13 % of the EU-28 total), the United Kingdom and Germany (each 10 % of the EU-28 total).

Close values were registered in Poland (8 %), while Romania and Italy covered 7% (each) of the UAA of the EU-28. The remaining twenty-one countries farmed 29 % of the EU-28's UAA which represented for at most 3 % each. (Eurostat, 2017)

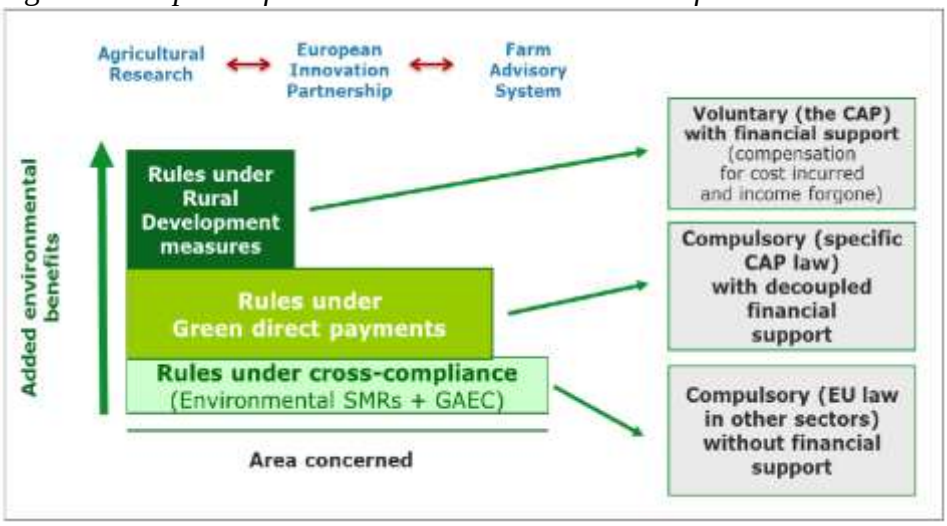
As (Ustaoglu et al., 2016) identify in their study, the EU landscape is largely dominated by agricultural land uses, in which more than 35% of all land in the EU has an agricultural use and from this perspective the agricultural plays a central role in terms of the potential impacts of land uses on the sustainability of the wider European environment. (Ustaoglu et al., 2016).

Starting from the assumption that the direct payments represent one of the most functional instruments in financing agriculture and the land utilization is highly dependent of such instruments, understanding the role and importance of agricultural resources as share of main land types in utilized agricultural area (UAA) may offer a deep contrast imagine in implementing the agri-environment measures and developing a more environmental friendly agriculture.

The reform and modernization of the CAP implies a deepening of sustainable management of agricultural land, against the backdrop of an active concern in promoting the production of ecological food and providing other specific ecosystem services among the European Union member States.

Fig. 3 provides a wide description of the environmental instruments of the CAP and their possibility to be applied in promoting a green and sustainable agriculture in EU.

Fig. 3: *Description of the environmental instruments of the CAP*



Source: *Author's capitation form European Commission, (2016)*

The agri-environment measures promoted as component of CAP contributes in preserving the environment and safeguarding the rural landscape and encourages farmers to have positive roles in rural communities. Greening the CAP through agri-environment measures intensify the multifunctional role of the agriculture by reorienting the traditional agricultural practices. The agri-environment measures aims to enhance the agro-ecosystems sustainability and prevent environmental degradation triggered by agriculture. As stated in (DG Agriculture, 2017) and described in Fig. 3, these aims could be achieved through:

- promoting agri-environment schemes and direct targeting of the rural development aid measures to the sustainable agriculture practices;
- reducing the support payments from CAP for those farmers who do not compliance with environmental requirements;
- encouraging agricultural sustainable practices and organic agriculture.

Perspectives of agricultural land under agri-environmental measures in Romania and some EU countries

During the years, under the CAP reforms the agricultural system has been influenced by insertion of the agri-environmental measures in the traditional approach of agricultural practices and numerous farmers have become beneficiaries of the financial measures associated to the

environmental measures. In table 2 is presented the agricultural land enrolled in agri-environmental measures in 2013 and targets for 2020.

Table 2: *Agricultural land enrolled in agri-environmental measures; 2013 and targets for 2020*

Country	Agricultural area under agri-environmental measures (ha)		Share of area under agri-environmental commitments on total UAA(%)	
	2013	2020 targets	2013	2020 targets
EU-28	46,854,995	40,275,490	26.3	22.5
Bulgaria	841,454	159,000	16.8	3.2
Czech Rep.	1,075,214	1,345,500	30.5	38.5
Estonia	549,764	854,000	56.9	86.0
Latvia	235,050	395,000	12.5	21.0
Lithuania	297,991	286,300	10.3	9.5
Hungary	1,156,936	649,679	21.7	12.2
Poland	2,614,808	2,504,000	18.1	17.4
Romania	2,195,185	1,577,050	15.8	11.4
Slovenia	225,589	382,810	47.1	80.3
Slovakia	359,832	396,490	18.7	20.6

Source: *Authors based on Eurostat, 2017*

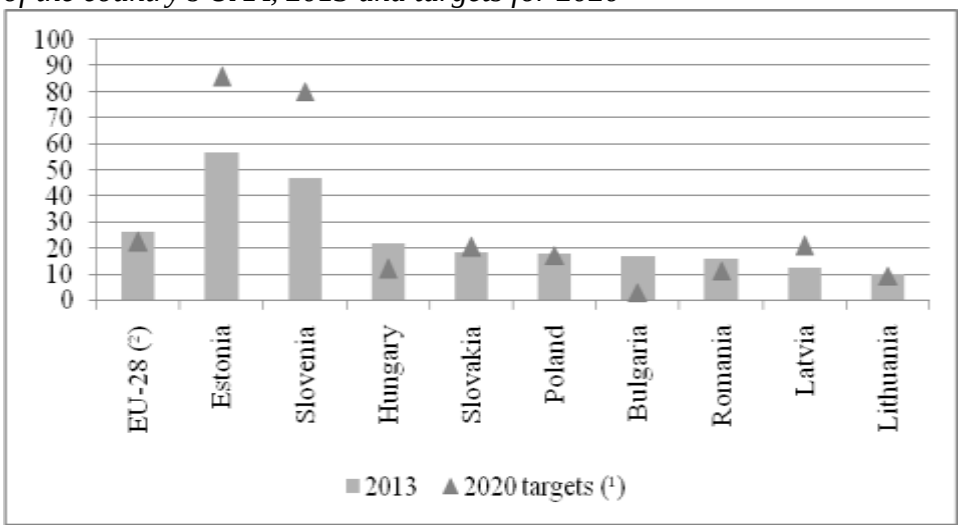
As in table above, the agricultural area under agri-environmental measures represents 26.3% of commitments on total UAA in 2013 in the EU-28, with an important expectancy target decreases in 2020 of 22.5%. Fig. 4 represents the agricultural land under agri-environmental measures as share of the country's UAA, 2013 and the targets for 2020.

As it could be analyzed from the data presented in Table 2 and Fig. 4, the agricultural land under agri-environmental measures as share of the country's UAA, in 2013 and targets for 2020 has registered important decreases. Promoting agri-environmental measures on the national agricultural system represents new orientations in valuing inland agricultural potential.

Taking into consideration that agri-environmental measure implies financial support and subsidies for the farmers who promote environmental friendly agriculture; the transformation of the traditional

agriculture under these considerations implies reconsideration of the agricultural performance and competitiveness.

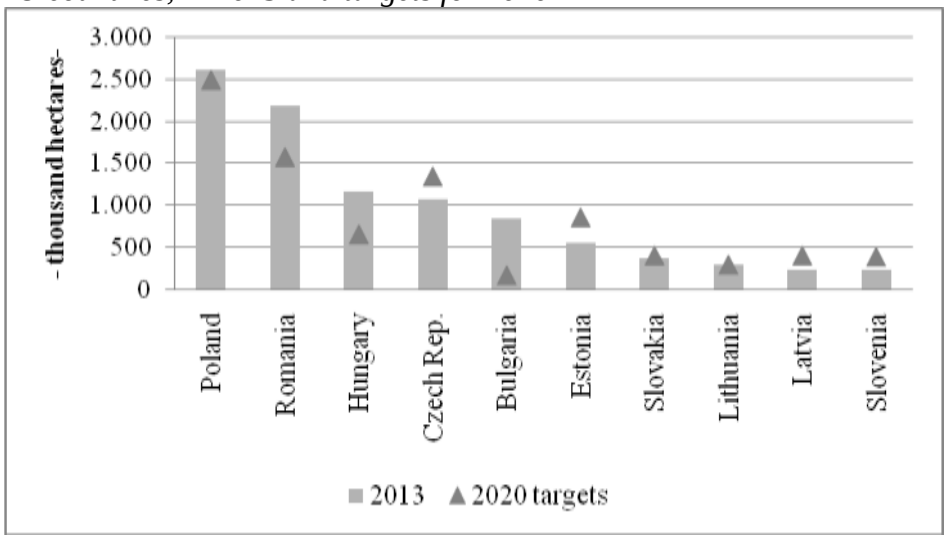
Figure 4: *Agricultural land under agri-environmental measures as share of the country's UAA, 2013 and targets for 2020*



(¹) Targets for 2020 in percentage is based on Eurostat estimates of utilized agricultural area in 2020

Source: *Authors based on Eurostat, 2017*

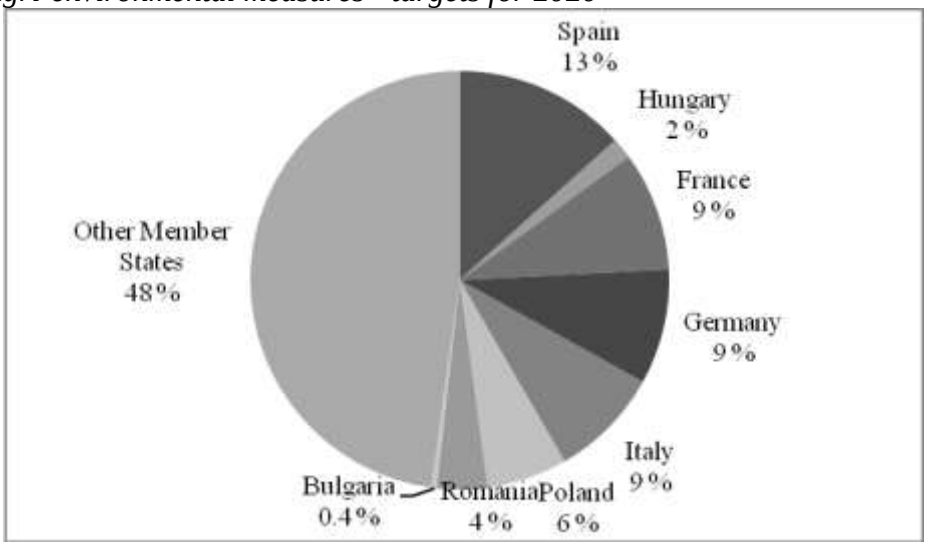
Figure 4: *Agricultural land under agri-environmental measures in some EU countries, in 2013 and targets for 2020*



Source: *Authors based on Eurostat, 2017*

Fig. 4 presents the land under agri-environmental measures, expressed in thousand hectares, in some EU countries, in 2013 and targets for 2020 and Fig. 5 shows Member States' targets for 2020 regarding the share of EU-28 total agricultural land under agri-environmental measures.

Figure 5: *Member States' share of EU-28 total agricultural land under agri-environmental measures - targets for 2020*



Source: *Authors based on Eurostat, 2017*

Form Figs. 4-5 it could be considered that under agri-environmental measures holds position of different importance in the agricultural production system. Despite the fact that there is massive interest in promoting a more environmental friendly agriculture, there is a determinant trend in reducing this type of measures and keeping the traditional agriculture as determinant model.

As shown in some European documents (Comitetul Economic și Social European, 2017), although almost 30% of direct payments are related to greening requirements centered on soil quality, biodiversity and carbon measures, there are still social and environmental problems that need to be resolved. (Comitetul Economic și Social European, 2017).

The ecological dimension of payments made under the first pillar of the CAP can directly contribute to the establishment of functional links between the environmental goods produced in the agricultural activity and the support of farmers' incomes. Addressing the problems of intensive

agriculture and biodiversity can be solved through agri-environment measures.

As (Comitetul Economic şi Social European, 2012) argues 'agriculture is largely a family economic activity in most Member States; four-fifths (80%) of the agricultural work force is represented by farmers and their families, and only a little over one third (34%) of permanent agricultural workers are women.' (Comitetul Economic şi Social European, 2012).

In this context, organic farming could represent a functional instrument in improving and promoting a more environmental friendly agriculture. Organic farming may stimulate the success of agri-environmental measures implementation and could be a more appropriate instrument in hands of the traditional farmers.

Table 3 and Fig. 6 present the transformations and the influences of conversion measures in promoting organic farming commitments in the analyzed countries.

Table 3: *Area under maintenance of and conversion to organic farming commitments, targets for 2020*

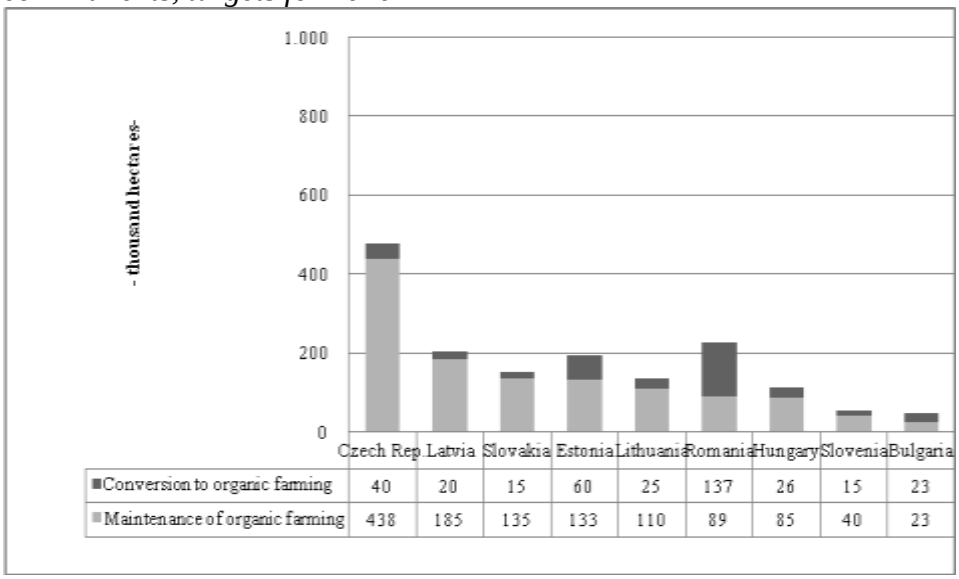
Country	Total per EU aggr. ha	MS as share of EU-28	Mainten. as % of nat. total
	10,223 ha		78.7%
	Total per MS		Mainten. as % of nat. total
Czech Rep.	478	5%	92%
Latvia	205	2%	90%
Slovakia	150	1%	90%
Estonia	193	2%	69%
Lithuania	135	1%	81%
Romania	226	2%	40%
Hungary	111	1%	76%
Slovenia	55	1%	73%
Bulgaria	46	0%	50%

Source: *Authors based on Eurostat, 2017b*

Applying agri-environment measures may lead to issues related to land resource management. The financial incentives granted under these conditions would favor renouncing the cultivation of land and the farmers'

option to benefit from agri-environment payments. At the same time, considering the proposal to use 7% of the land as an area of ecological interest, an important part of the agricultural land would run out of the agricultural production circuit, which would increase the risks associated with food security.

Figure 6: *Area under maintenance of and conversion to organic farming commitments, targets for 2020*



Source: *Authors based on Eurostat, 2017b*

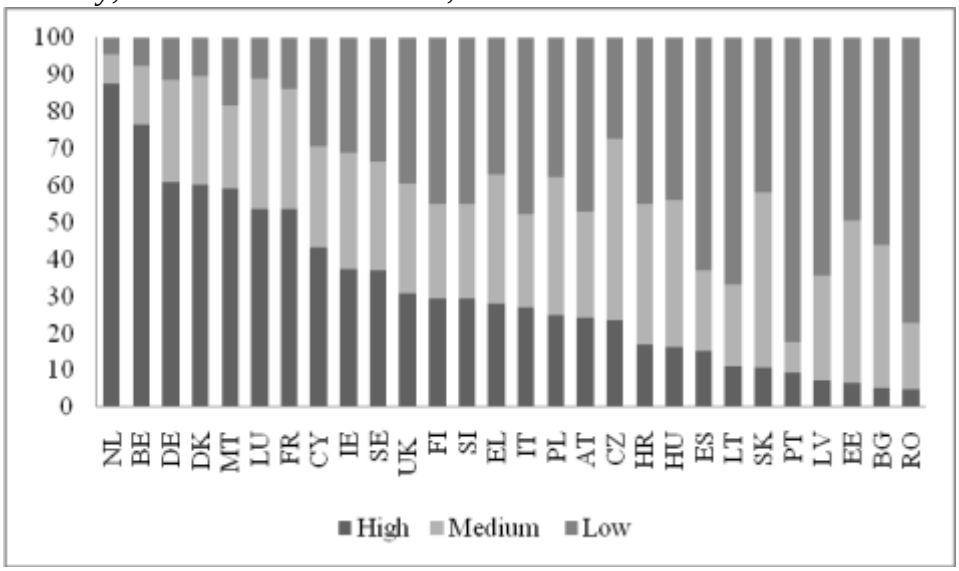
As it could be seen from the data presented in Fig.6, area under maintenance and conversion to organic farming commitments in 2020 register a dramatic perspective. Conversion to organic farming is a rather subtle concern for most of the analyzed states. Just Romania, Estonia and Czech Rep. intends to allocate somewhat larger areas to this agricultural system.

Agricultural intensity and agri-environmental measures

Another aspect related to analysis regarding agri-environmental measure is represented by the agricultural intensity. According to literature (Garnett and Godfray, 2012; Garnett et al., 2013; Eurostat, 2017a), the input intensity of a farm could usually be defined as the level of inputs used by the farm per unit of factor of production, generally referred to land resources and the intensification could be understand as the increase

farm intensity. Fig.7 shows the share of agricultural area managed with different farm input intensity in some EU countries in 2013.

Figure 7: *Share of agricultural area managed with different farm input intensity, in some EU-28 countries, 2013*

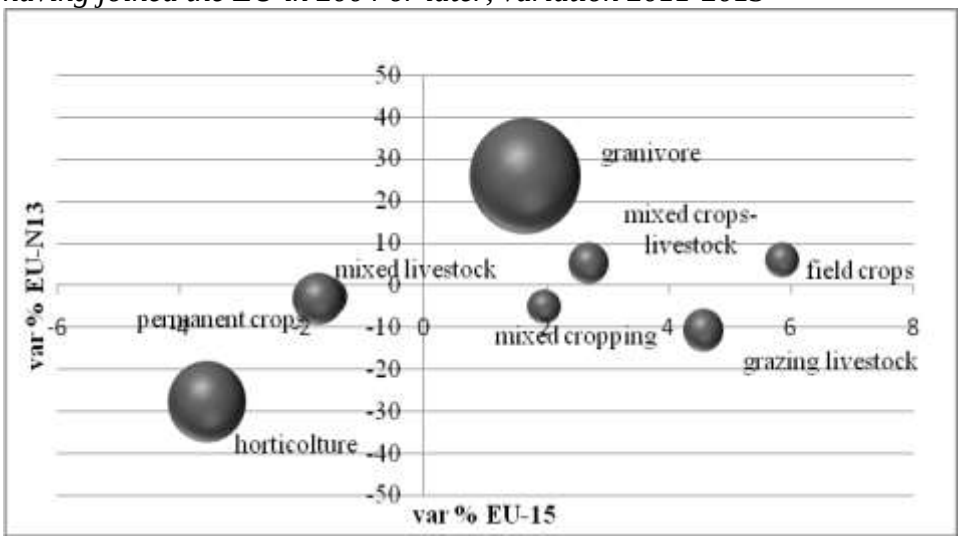


Source: *Authors based on Eurostat, 2017a*

The first analysis of the Fig.7 implies that the shares of UAA managed by low, medium and high intensity farms are relatively distributed among analyzed countries. The share of UAA managed by high intensity farms is higher in the older EU member states and lower in the last included member states. The share of UAA managed by low intensity farms has an opposite value. This situation reflects in a great manner the characteristics of the each country agricultural model.

The level of farm input intensity reviles the attitude of the framers for the agricultural practices applied. In achieving the agricultural competiveness, agricultural production is based intensive practices and industrialized mechanisms. Agricultural intensification is based on the increase of the agricultural inputs per hectare of land used, which determines an increased level of agricultural production. In this context, the agricultural efficiency is increasing and the farmers receive satisfactory outputs. Fig. 8 describes the inputs expenditure by type of farming, EU-15 and countries having joined the EU in 2004 or later, variation 2011-2013.

Figure 8: *Inputs expenditure by type of farming, EU-15 and countries having joined the EU in 2004 or later, variation 2011-2013*



Source: *Eurostat, 2017a*

As Fig. 8 shows, the inputs expenditure by type of farming offer a descriptive imagine of the status. In this case the variation during 2011-2013is stronger for the newer EU Member States than for the older EU-15. According to (Eurostat, 2017a), "the granivore farms and the horticultural farms have the highest values of expenditure (respectively 2670 EUR/ha and 1320 EUR/ha), whereas mixed cropping farms and field crops farms have the lowest (around 230-240 EUR/ha)." (Eurostat, 2017a).

Conclusions

The agri-environment measures represent important instruments in shaping the new agricultural paradigm. Greening the direct payments and encouraging farmers to promote more environmentally friendly farming may help strengthen an environmentally responsible agricultural model that equally combines high productivity and competitiveness with the demands of organic farming.

The promotion of agri-environmental measures, although encouraging reticence on the part of farmers, must ensure a sustainable combination of the classic function of agriculture to produce food with the need for environmental responsibility.

However, agri-environment measures are not so flexible and adaptable enough to respond appropriately to agricultural market fluctuations and to support farmers' incomes. Agri-environmental instruments and measures must be designed in order to support the sustainable development of rural areas and encourage farmers to promote a more ecofriendly agriculture. The payments granted under agri-environmental measures should provide a proactive framework in promoting agricultural production methods compatible with the ecofriendly practices.

References

1. Andrei, J. V., Darvasi, D. (2012). Perspectives and Challenges in financing the new Common Agricultural Policy: a new paradigm. *Journal of Food*, Agriculture & Environment, 10(1), 904-907.

2. Bourblanc, M. (2011). Des instruments émancipés. *Revue française de science politique*, 61(6), 1073-1096.

3. Ciutacu, C., Chivu, L., Andrei, J. V. (2015).Similarities and dissimilarities between the EU agricultural and rural development model and Romanian agriculture.Challenges and perspectives. *Land Use Policy*, 44, 169-176.

4. Comitetul Economic şi Social European (CES) 2008, AVIZUL Comitetului Economic şi Social European privindrelaţiadintre schimbările climatice şiagri culturăîn Europa, NAT/384 Schimbările climatice şiagri culturaîn Europa, Bruxelles, 9 iulie 2008.

5. Comitetul Economic şi Social European (2012), PAC înperspectivaanului 2020, NAT/520, Bruxelles, 25 aprilie 2012.

6. Comitetul Economic și Social European (2017), Avizul Comitetului Economic și Social European - O eventualăredefinire a politicii agricole comune, NAT/703, Raportor: John BRYAN

7. DG Agriculture (2017), *Agriculture and the environment: Introduction, available* at:https://ec.europa.eu/agriculture/envir_ro, accessed on: 11.02.2018.

8. European Commission (2000), *Communication from the Commission to the Council and the European Parliament - Indicators for the*

integration of environmental concerns into the common agricultural policy, COM/00/0020 final.

9. European Commission (2016), *Commission Staff Working Document Review of greening after one year*, SWD (2016) 218 final PART 1/6, Brussels

10. European Commission, DG Agriculture and Rural Development (2018), *Agri-environment measures*, available at: https://ec.europa.eu/agriculture/envir/measures_en, accessed on: 09.01.2018.

11. Eurostat, (2017), *Agri-environmental indicator - cropping patterns*, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agri-environmental_indicator_-_cropping_patterns, accessed on: 12.02.2018.

12. Eurostat, (2017a), *Agri-environmental indicator - intensification – extensification*, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agri-environmental_indicator_-_intensification_-_extensification, accessed on:12.02.2018.

13. Eurostat, (2017b), *Agri-environmental indicator – commitments*, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_commitments, accessed: accessed on: 12.02.2018

14. Garnett, T., Godfray, C. (2012). *Sustainable intensification in agriculture. Navigating a course through competing food system priorities. Food climate research network and the Oxford Martin programme on the future of food*, University of Oxford, UK, 51.

15. Garnett, T., Appleby, M. C., Balmford, A., Bateman, I. J., Benton, T. G., Bloomer, P., ... Herrero, M. (2013). Sustainable intensification in agriculture: premises and policies. *Science*, 341(6141), 33-34.

16. Jepsen, M. R., Kuemmerle, T., Müller, D., Erb, K., Verburg, P. H., Haberl, H., ... Björn, I. (2015). Transitions in European land-management regimes between 1800 and 2010. *Land Use Policy*, 49, 53-64.

17. Levers, C., Butsic, V., Verburg, P. H., Müller, D., Kuemmerle, T. (2016). Drivers of changes in agricultural intensity in Europe. *Land Use Policy*, 58, 380-393.

18. Pacini, G. C., Merante, P., Lazzerini, G., Van Passel, S. (2015). Increasing the cost-effectiveness of EU agri-environment policy measures through evaluation of farm and field-level environmental and economic performance. *Agricultural systems*, 136, 70-78.

19. Unay-Gailhard, İ., Bojnec, Š. (2016). Sustainable participation behaviour in agri-environmental measures. *Journal of Cleaner Production*, 138, 47-58.

20. Ustaoglu, E., Castillo, C. P., Jacobs-Crisioni, C., Lavalle, C. (2016). Economic evaluation of agricultural land to assess land use changes. *Land Use Policy*, 56, 125-146.

21. Uthes, S., Matzdorf, B. (2013). Studies on agri-environmental measures: a survey of the literature. *Environmental management*, 51(1), 251-266.

22. Van Gossum, P., Ledene, L., Arts, B., De Vreese, R., Van Langenhove, G., Verheyen, K. (2009). New environmental policy instruments to realize forest expansion in Flanders (northern Belgium): A base for smart regulation? *Land Use Policy*, 26(4), 935-946.

23. Zimmermann, A., Britz, W. (2016). European farms' participation in agri-environmental measures. *Land Use Policy*, 50, 214-228.