

Sustainable Agriculture Management in European Union Countries

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Abstract

The contemporary agriculture facing not only challenges in the form of higher efficiency, productivity or consolidation, but also it should fulfill certain criteria, related to sustainable development concept. In these days the management of agriculture sector should take into account, not only the economic, but also the ecological aspects. Taking account that agriculture is one of the most important activities in EU countries, the purpose of the article was to outline the present management of agriculture from sustainable development point of view. The methodology used adopted the form of comparative analysis conducted for chosen agri-environmental indicators. Based on Eurostat statistics and own calculations, it can be concluded that the level of agriculture sustainable if very differentiated between selected countries in EU.

Keywords: Agriculture, Sustainable Development, Management, Sustainable Agriculture.

Introduction

Agriculture in EU countries continues to be a very important sector of the economy, next to the food, fisheries and forestry industries, it is one of the most important elements of broadly understood agribusiness (Skowron-Grabowska, 2010). Agriculture and rural areas play a key role in the economic and social development of developing countries (Brzozowska, 2014). The basic task of agriculture is to provide food for worldwide population, but in present times, reducing the environmental impact and preserving natural resource for the future generation also is a major task (OECD, 2020). Consequently, there is a need for a conscious agricultural policy aimed not only at the further development of agriculture, ensuring the continuity of food supply, but also guaranteeing adequate financial profits for farmers, reducing poverty but also ensuring food security (Wspólna polityka rolna..., 2014). However, in agriculture, not only food production is important. In all EU Member countries, there are farmers who care about rural areas and traditional lifestyles. Farmers need equipment, energy and fuel, buildings, fertilizers and veterinary care for animals (Kalinichenko, Havrysh, Perebyynis 2016). And the competitiveness of agricultural enterprises management is inextricably linked to the state of the other agribusiness links and the level of development and modernization of the economy (Starostka-Patyk, 2016).

In Poland, until 1989, agriculture management was completely incapacitated by full dependence on the state, in terms of production, supply and disposal and on social grounds as well. This caused that the collision with the realities of the market economy become a challenge to which Polish farmers

were completely unprepared, and the state policy in fact hindered their adjustment process of proper management.

The principle of sustainable development was adopted during the Earth Summit in Rio de Janeiro in 1992, under the most well-known definition: „Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Our common future, 1992). Since then, it has been incorporated into all EU policies, including agriculture, which meant new obligations for farmers to provide public goods in the interests of all of us, in the form of well-maintained rural areas, high biodiversity, wise use of natural resources and cultural objects (Fidlerova et al., 2014). This concept is even more important for agriculture and rural areas that directly affect the natural environment (Adamowicz, 2000), as today the concept of sustainable development has strongly affected the agriculture sector (Latruffe et al., 2016). Agriculture has a great impact on the natural environment – its negative effects increase the pollution and lead to soil’s, water’s and air’s degradation, but its positive effects can cause greenhouse gases decrease or mitigate the flood risks by the adoption of certain practices (OECD, 2020).

Due to the close link between the agriculture development and the development of rural areas, it is impossible to talk about the sustainable development of these areas without sustainable agriculture (Žmija, 2011). Sustainable agriculture development, which is a key element of sustainable rural development, as defined by the FAO Food and Agriculture United Nations in 1987, is the use and conservation of natural resources and the orientation of technology and institutions to meet human needs and future generations (Sydorovych and Wossink, 2008).

Awareness of the close development of agriculture with the concept of sustainable development manifests itself in emphasizing the essence of this concept in many documents related to the development of agriculture and rural areas (Velten et al., 2015). Reference to the concept of sustainable development can be found in the CAP (Common Agriculture Policy) (Wspólna polityka rolna..., 2012). Sustainability appeared in the Agenda 2000 reform, which established the second pillar of the CAP and formulated agri-environmental programs and started to support sustainable development activities (Jambor, 2011). The present CAP is structured around two pillars: first pillar focuses on greening and a more equal distribution of support, while second pillar focuses on competitiveness, innovation, climate change and the environment (Dunay, 2011). The Europe 2020 Strategy document, which also includes references to the concept of sustainable development, in one of its headline targets: sustainable growth (A European strategy..., 2020) . The main goals of “Sustainable growth” are connected to climate, energy and efficiency targets, such as using renewable energy, building low carbon economy, improving energy efficiency (Vida and Illes, 2014). In, 2019, a new document “Annual Sustainable Growth Strategy 2020” has been released with the new term “European Green Deal” as a new growth strategy for all UE countries (Annual Sustainable..., 2020).

Sustainable agriculture as one of the fields of sustainable rural development and an alternative to intensive industrial farming, should rationally manage the land resources, so that they can benefit from it and meet their needs for future generations of producers and consumers as well (Marsden and Sonnino, 2009). Its essence is to strive for a stable and, at the same time, economically viable and socially acceptable production in a way that does not harm the natural environment (Pretty, 2008).

Sustainable agriculture in European Union Countries – the purpose of the research

Bearing in mind all of the above, an analysis, which outcomes may be response to the extent to which agriculture of EU countries is sustainable, have been conducted. To find an answer, the values of selected agri-environmental indicators were measured. To perform an analysis, chosen Eurostat statistics have been used and own calculations as well. The selected indicators were adopted to the study as its volumes present the actual level of sustainability in agriculture. The obtained data and

appropriate calculations made it possible to present the current state of agriculture in the aspect of sustainable development. The following issues have been analyzed:

- Basic information regarding the agriculture in EU including: the number of farms, their total area, the amount of income earned, the number of employees and the level of production (crops, milk and meat) in order to present the current state of agriculture in EU countries,
- then, the overall farms' efficiency was calculated based on the chosen indicators,
- productivity: the income generated by single farm, the production level generated by single farm, the income generated by farm's single employee, the average size of farm and the income generated by 1 hectare. These indicators were chosen as the production is one of the four major components of sustainable agriculture,
- the values of adopted agri-environmental indicators for agriculture in all EU countries such as: the share of UAA under agri-environmental measure, the average annual expenditure on agri-environmental measures per hectare, the total public expenditures for environmental trainings, information and advisory services and the total public expenditures for environmental trainings, information and advisory services in 2010 per employee in agriculture.

The conducted analysis present the state from the year 2016, as the most current year, because the majority of statistical data obtained for the analysis came from this year as the most up-to-date.

The Research Results

General Data

The first stage of the analysis was the presentation of basic figures characterizing agriculture in all EU countries. These values were: the number of farms, their total area, the amount of income earned, the number of employees and the level of production (crops, milk and meat) presented in Table 1.

The yellow fields indicate the first five countries with the highest values for a given category, and the countries are being sorted by the number of farms. As shown in the table above, the first five countries with the largest number of farms are: Romania (3.6 mln), Poland (1.4 mln), Italy (1.0 mln), Spain (0.9 mln) and Greece (0.7 mln). For the total area of agricultural land, Spain is on the 1st place, with more than 30 million hectares of agricultural land, on the second is France, with less than 30 million hectares of agricultural land. On further places, the following countries have been found: Poland (16.4 mln ha), Germany (18.3 mln ha) and United Kingdom (18.6 mln ha), in which the area of agriculture land is similar. In the case of revenues generated by farms, France is on 1st place, when in 2013 farms generated a total of more than 56 billion Euros. On the further places are Germany (46 billion Euros), Italy (43 billion Euros), Spain (35 billion Euros) and United Kingdom (21 billion Euros). It is worth to add that, right after the United Kingdom, Poland was located, whose farms in 2013 generated over 21 billion euro revenue. In the case of number of employees in agriculture, on the first four places are the countries with the largest number of farms: Romania (1.5 mln employees), Poland (1.9 mln employees), Italy (0.8 mln employees) and Spain (0.8 mln employees). Whereas France is on the last place (0.7 million employees). But, in contrast, France is on the 1st place in the case of total production, being an undisputed leader, since French farms in 2013 have produced over 75 million tons of products. Germany, which produced nearly 20 million tons less – 57 million tons of products, are on 2nd place. Poland is on the 3rd place, whose production is less than half of the French farms production – 31 million tons. The next is Spain, whose production is one third the size of French farms and is hovering around 25 million.

Table 1: The main volumes of EU agriculture

Country	Number of farms	Total farms' area (ha)	Standard output (euro)	Labour force directly employed (per person)	Total production of crops, milk and meat (in tons)
Romania	3 629 660	14 661 380	11 989 578 640	1 552 630	20 926 360
Poland	1 429 010	16 487 480	21 797 461 420	1 918 550	31 379 860
Italy	1 010 330	15 933 790	43 793 881 650	816 920	22 125 610
Spain	965 000	30 042 210	35 978 946 920	813 550	25 954 280
Greece	709 500	5 062 500	8 103 007 120	463 860	4 670 360
Hungary	491 330	7 048 760	5 577 723 710	433 700	13 632 550
France	472 210	29 264 400	56 914 191 760	724 690	75 214 700
Germany	285 030	18 305 150	46 252 042 690	522 730	57 491 100
Portugal	264 420	4 625 700	4 509 024 200	323 470	1 447 650
Bulgaria	254 410	5 608 980	3 335 670 170	320 230	9 368 190
United Kingdom	183 040	18 663 950	21 818 581 460	274 520	28941060
Lithuania	171 800	3 125 370	1 919 223 290	144 770	4 511 570
Croatia	157 440	1 728 100	2 029 135 280	175 050	3 661 050
Austria	140 430	5 815 840	5 671 213 540	111 160	5 978 050
Ireland	139 600	5 277 990	5 012 538 820	163 690	3 457 890
Latvia	81 800	3 058 780	990 012 640	82 090	1 964 370
Slovenia	72 380	902 160	1 009 230 010	82 450	489 440
Netherlands	67 480	2 008 870	20 498 061 340	153 310	2 202 100
Sweden	67 150	6 424 370	4 678 580 280	59 320	6 349 460
Finland	54 400	5 786 690	3 398 060 700	57 550	4 143 220
Norway	43 270	5 372 090	3 410 100 700	44 000	965 000
Denmark	38 280	2 920 610	9 580 213 710	53 170	9 943 600
Belgium	37 760	1 350 200	8 406 674 190	56 730	4 909 470
Cyprus	35 380	123 810	495 411 360	16 550	140 600
Czech Republic	26 250	5 076 430	4 446 963 820	105 080	8 433 760
Slovakia	23 570	3 067 090	1 812 222 660	50 600	3 421 490
Estonia	19 190	1 229 420	676 317 090	22 060	1 149 360
Malta	9 360	11 980	96 790 090	4 450	11 300
Luxembourg	2 080	137 790	313 811 850	3 530	181 250

Table 2: Overall farms' efficiency in relations to chosen indicators

Country	The income generated by single farm (in euro)	The production level generated by single farm (in tons/farm)	The income generated by farm's single employee (in euro/farm)	The average size of farm (in ha/farm)	The income generated by 1 hectar (in euro/hectar)
Romania	3 303.22	5.77	7 722.11	4.04	817.77
Poland	15 253.54	21.96	11 361.42	11.54	1 322.06
Italy	43 346.12	21.90	53 608.53	15.77	2 748.49
Spain	37 283.88	26.90	44 224.63	31.13	1 197.61
Greece	11 420.73	6.58	17 468.65	7.14	1 600.59
Hungary	11 352.30	27.75	12 860.79	14.35	791.31
France	120 527.29	159.28	78 535.91	61.97	1 944.83
Germany	162 270.79	201.70	88 481.71	64.22	2 526.72
Portugal	17 052.51	5.47	13 939.54	17.49	974.78
Bulgaria	13 111.40	36.82	10 416.48	22.05	594.70
United Kingdom	119 201.17	158.11	79 479.02	101.97	1 169.02
Lithuania	11 171.26	26.26	13 257.05	18.19	614.08
Croatia	12 888.31	23.25	11 591.75	10.98	1 174.20
Austria	40 384.63	42.57	51 018.47	41.41	975.13
Ireland	35 906.44	24.77	30 622.14	37.81	949.71
Latvia	12 102.84	24.01	12 060.09	37.39	323.66
Slovenia	13 943.49	6.76	12 240.51	12.46	1 118.68
Netherlands	303 764.99	32.63	133 703.35	29.77	10 203.78
Sweden	69 673.57	94.56	78 870.20	95.67	728.26
Finland	62 464.35	76.16	59 045.36	106.37	587.22
Norway	78 809.82	22.30	77 502.29	124.15	634.78
Denmark	250 266.82	259.76	180 180.81	76.30	3 280.21
Belgium	222 634.38	130.02	148 187.45	35.76	6 226.24
Cyprus	14 002.58	3.97	29 934.22	3.50	4 001.38
Czech Republic	169 408.15	321.29	42 319.79	193.39	876.00
Slovakia	76 886.83	145.16	35 814.68	130.13	590.86
Estonia	35 243.20	59.89	30 658.07	64.07	550.11
Malta	10 340.82	1.21	21 750.58	1.28	8 079.31
Luxembourg	150 871.08	87.14	88 898.54	66.25	2 277.46

In general, looking at the tables 1, 2, it is clearly visible that Romania, Poland, Italy, Spain, France, Germany and United Kingdom are characterized by the largest values. On the other hand, Greece is on the 5th place in terms of the number of farms, but the remaining values are far from the first five. Based on the calculations, to the most efficient agricultures the following countries can be selected: Netherlands, Denmark, Belgium, Czech Republic, Germany and United Kingdom. The following

conclusions can be drawn for the individual indicators:

1. The income generated by single farm (in euro) – In this case, farms in the Netherlands were the most efficient, one farm from 67 000 was able to generate revenues of more than 300 000 Euros. The next two places included farms from Denmark and Belgium, generating 250 000 euro and 222 000 euro respectively. On the last two places Czech Republic and Germany have been found, with the 169 000 euro and 162 000 Euro generated revenues. While among all these countries, this is Germany with the largest amount of farms – over 285 thousand so four times more than Netherlands.
2. The production level generated by single farm (in tons) – here farms from Czech Republic are on the first place, when in the years 2013 the production volume per one farm estimated around 321 tons per farm. The next is Denmark, with a production of 259 tons per farm, and Germany – 201 tons per farm. On the last places are France and United Kingdom, whose production volume per one farm was 159 tons and 158 tons respectively.
3. The income generated by farm's single employee (in euro) - on the basis of the calculations, it is clear that Denmark is the leader - the work of one employee in agriculture brought the effect of 180 thousand euro. On the 2nd place was Belgium, where the work of a single employee translated into 148 thousand euro revenue. In this set up, again the Netherlands, with the income generated by a single employee at 133 thousand euro has appeared. On the last place is Germany again and Luxembourg, where the work of one employee brought the effect of 88 thousand euro. But in Germany, 522 thousand people are employed in agriculture, and in Luxembourg - 3,500 employees only.
4. The income generated by 1 hectare (in euro) – again Holland is on 1st place - where revenues from one hectare in 2013 amounted to 10 thousand euro. Malta ranked second, for the first time in this ranking, with a revenue of one hectare of 8,000 euro. While Netherlands has more than 2 million hectares of agricultural land and Malta has 11,000 hectares only. On the further place are Belgium, Cyprus and Denmark, with the revenues: 6 thousand euro, 4 thousand euro and 3 thousand euro. While Denmark has 3 mln hectares of agricultural land and Belgium 1,3 mln hectares, the area of agricultural land on Cyprus does not exceed 125 thousand hectares.

Thus, it can be concluded that the number of farms, the area of agricultural land, the volume of production and employment, and the volume of revenue generated is practically unimportant in terms of agricultural efficiency. While in the case of basic volumes, where the following countries have been characterized by the highest values: Romania, Poland, Italy, Spain, France, Germany, United Kingdom, in the case of the indicators above, the highest volumes were noted for the countries such as: Netherlands, Denmark, Belgium, Czech Republic and Germany and Malta, Cyprus, Luxembourg, France and United Kingdom as well. Only Germany, France and United Kingdom are present in both groups. But none of these countries in efficiency analysis got the first three places.

In addition, based on the calculations made in relation to the analysis of the level of efficiency of individual agricultural economies, it was also possible to identify countries where the level of efficiency of agriculture is similar to Polish agriculture (figure 1).

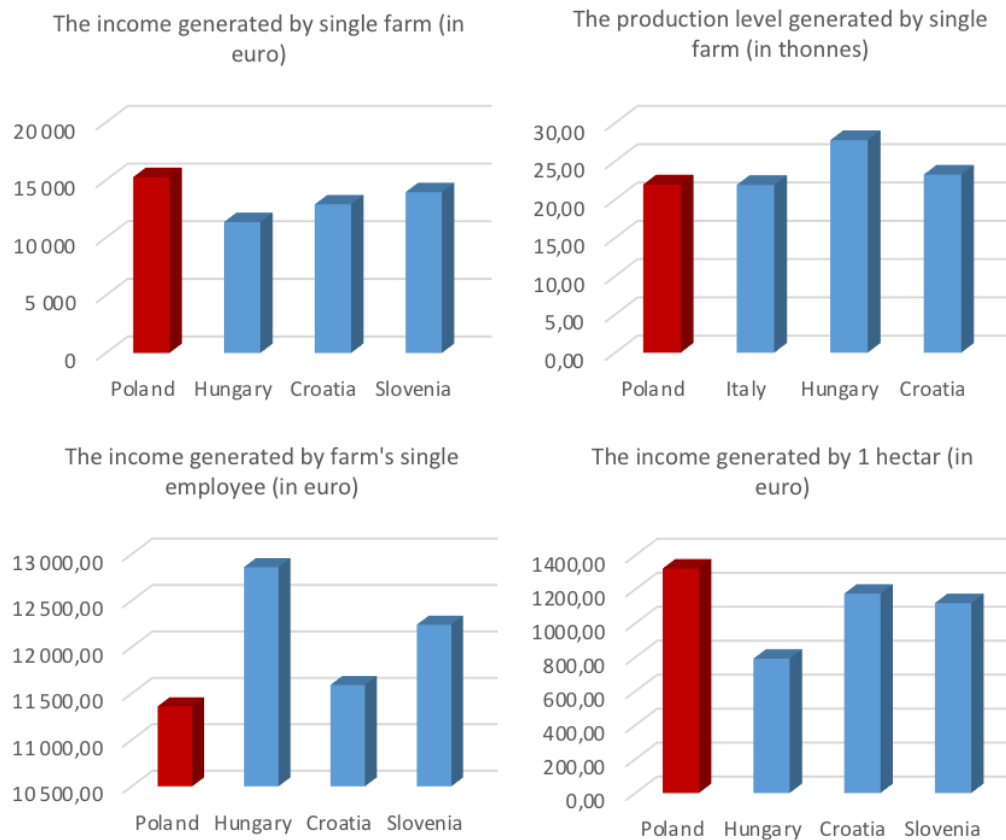


Fig. 1: The graphic presentation of similar values for selected countries

In terms of indicators such as:

- the income generated by single farm,
- the production level generated by single farm,
- the income generated by farm's single employee,
- the income generated by 1 hectare.

we may assume that agriculture in Italy, Portugal, Croatia and Slovenia is quite similar to Poland. That is why in the further analysis, in regards to describe the sustainability level in Polish agriculture, for these countries calculations will be conducted as well.

Agri-Environmental Indicators

Having in mind that almost 40% of the EU's land area is being farmed, it can be concluded that agriculture has a very important impact on the natural environment.

The above and the Common Agriculture Policy's adoption caused that new indicators, called Agri-environmental indicators (AEI's) have been developed, in order to track and measure the integration of environmental concerns into the Common Agricultural Policy (CAP) at EU, national and regional levels (ES, 2017). According to data from Eurostat, unfortunately the year 2009 is the latest year, no further statistics are available, the following can be concluded (in division to chosen sub-indicators):

1. Expenditures on agri-environmental measures -the differences in the agri-environmental expenditure per hectare among various countries, give indication of the importance they attach to the implementation of agri-environmental measures across their own agricultural area (table 3).

Table 3: Average annual expenditure on agri-environmental measures per hectare of UAA supported (EUR per ha)

Country	Average annual expenditure on agri-environmental measures per hectare of UAA supported (EUR per ha)	Country	Average annual expenditure on agri-environmental measures per hectare of UAA supported (EUR per ha)
Malta	615	Czech Republic	190
Cyprus	610	Italy	190
Netherlands	460	Germany	180
Estonia	375	Lithuania	140
Austria	350	Denmark	130
Luxembourg	330	Belgium	120
Slovenia	275	Ireland	115
Hungary	210	Latvia	110
Sweden	205	Romania	90
Portugal	202	Spain	80
Slovakia	200	Poland	75
		France	60
		Bulgaria	50
		United Kingdom	45
		Finland	10

As we can see from the table above Malta is on the first place with average annual expenditure on agri-environmental measures per hectare with 615 euro. On the second place is Cyprus, whose average annual expenditure on agri-environmental measures per hectare, was 610 euro in the year 2009. But it is worth to bear in mind, that Malta and Cyprus are characterized by the smallest area of agriculture land, 11 980 hectares and 123 810 hectares respectively. Thus, it can be assumed that even a little area of agriculture land makes it possible for such a high expenditure to be made by both countries. But on the 3rd place is Netherlands, whose average annual expenditure on agri-environmental measures per hectare was 460 euro, but total farms area is more than 2 mln hectares. Poland, on the other hand, is in the final part of the statement, amounting to 75 Euros, which accounts for only one-eighth of the expenditure incurred by Malta and Cyprus. Also among countries like Italy, Slovenia, Hungary and Croatia, Poland has the lowest level of average annual expenditure on agri-environmental measures per hectare. And on the first place is Slovenia with 275 euro. In the remaining, selected, countries – the level of these expenditures is far above 150 euro. Only in Poland, the level of these expenditures is below 100 euro. While lowers expenditures of average annual expenditure on agri-environmental measures per hectare have the following countries: France, Bulgaria, United Kingdom and Finland, while in Finland the expenditure level in the year 2009, was 10 euro only.

2. Total public expenditures for environmental trainings, information and advisory services – according to the data from Eurostat for 2010, Sweden, Ireland, Spain, France and Austria had the highest number of participants to environmental training, and Sweden represents more than 50% of

the total participants among all UE countries (Kalinichenko and Chekhlatyi 2017). The highest numbers of applications for environmental advisory services were registered in Italy, Hungary and the Czech Republic – these three countries were accounted for 79% of the total number of applications. In relations to public expenditures the most important sub-indicator was number and share of participants in vocational trainings sub-indicator (table 5).

The above table presents the outcomes of expenditures of vocational trainings, applications for advisory services and economic actors in trainings. The unquestioned leader of this list is Sweden, whose spending in 2010 amounted to over 36 635 thousand euro, and 92% of that expenditure was related to the vocational trainings. On the 2nd place is Austria, which in the year 2010, spent 6 882 thousand euro on this kinds of trainings, and 5 392 thousand euro on economic actors in trainings (78%) only. On the 3rd place in France, which spent 4 506 thousand euro on that purpose, almost all expenses went on vocational trainings. On a further place Belgium can be found, with the expenditure level of 4 132 thousand euro and with the significant share of vocational trainings (68%). Poland, allocating 34 thousand euro on this kinds of trainings in the year 2010, is located on the one of the latest places. But at the very end, Slovenia can be found, which designated only 1 thousand euro for vocational trainings in the year 2010 (table 4).

Table 4: Average annual expenditure on agri-environmental measures per hectare of UAA supported (EUR per ha)

Country	Number and share of participants in vocational trainings (thousand Euro)	Number and share of applications for advisory services (thousand Euro)	Number and share of economic actors in trainings (thousand Euro)	TOTAL
Austria	1 490	0	5 392	6 882
Belgium	2 810	967	355	4 132
Czech Republic	408	867	423	1 698
Denmark	898	0	116	1 014
Estonia	23	32	0	55
Finland	244	0	338	582
France	4 486	0	20	4 506
Germany	660	30	302	992
Hungary	147	909	0	1 056
Ireland	1 449	0	295	1 744
Italy	1 967	1 291	0	3 258
Latvia	107	0	0	107
Lithuania	775	0	0	775
Luxembourg	10	0	0	10
Poland	0	34	0	34
Slovakia	933	0	0	933
Slovenia	1	0	0	1
Spain	1 789	0	0	1 789
Sweden	33 763	0	2 872	36 635
United Kingdom	585	41	183	809
TOTAL	52 545	4 171	10 296	67 012

Checking the level of expenditure on environmental training per capita in agriculture, we will get slightly different results. In this case, Sweden is on the 1st place, where the level of expenditure per employee in 2010 amounted to 617 Euros. Belgium, on the 2nd place in the list above, and fourth in previous ones, in the year 2010 allocated 70 Euros for training courses. Austria, which in the first ranking, was on the 2nd, occupies the 3rd place, but the difference in spending is huge - because the level of expenditure per employee in Austria is almost 10 times lower than in Sweden.

Table 5: Average annual expenditure on agri-environmental measures per hectare of UAA supported (EUR per ha)

Country	TOTAL	Country	TOTAL
Sweden	617.58	Italy	3.99
Belgium	72.84	United Kingdom	2.95
Austria	61.91	Luxembourg	2.83
Denmark	19.07	Estonia	2.49
Slovakia	18.44	Hungary	2.43
Czech Republic	16.16	Spain	2.20
Ireland	10.65	Germany	1.90
Finland	10.11	Latvia	1.30
France	6.22	Poland	0.02
Lithuania	5.35	Slovenia	0.01

The biggest difference, however, is in the case of France, where in the first ranking it was third in the list with expenditure of EUR 4 506 thousand, in the case of the amount of expenditure per employee in 2010 - amounted to 6 Euros only. This is due to the fact that among the countries mentioned earlier, France has the highest amount of employees in agriculture – more than 700 thousand. Poland, again, can be found on the further place, with the expenditures level per employee 2 eurocents only. Such a low cost level is connected with the fact, that in the year 2010, Poland allocated 34 thousand euro on trainings only but the number of employees in agriculture is more than 2 mln people.

Conclusion

Based on the conducted analysis one major assumption can be made - the number of farms, the area of agricultural land, the volume of production and employment, and the volume of revenue generated is practically unimportant in terms of agricultural efficiency. For example, in Poland the agriculture sector plays a major role in the national economy, because Poland has the highest values for the number of farms, total farm's area, standard output, people working in agriculture and the total production of crops, milk and meat. But taking account the indicators such as: the income generated by single farm, the production level generated by single farm, the income generated by farm's single employee, the average size of farm and the income generated by 1 hectare, it is clearly visible that polish agriculture has one of the last places. Thus, it can be concluded that the efficiency of polish agriculture, being the determinants and major element of sustainable agriculture, is at a very low level. But having in mind that the main purpose of this article was to check the level of sustainability of EU countries agriculture, it is possible to assume that:

- In case of agricultural area enrolled in agri-environmental measures - Luxembourg, Finland, Sweden and Austria more than two-thirds of the UAA were enrolled in agri-environmental commitments, while in countries such as: Portugal, Cyprus, Malta, Romania, Lithuania, the Netherlands, Poland, Bulgaria this share was below 10%,

- In case of expenditures on agri-environmental measures - Malta is on the first place with average annual expenditure on agri-environmental measures per hectare with 615 euro. On the second place is Cyprus, whose average annual expenditure on agri-environmental measures per hectare, was 610 euro in the year 2009,
- In case of total public expenditures for environmental trainings, information and advisory services - the unquestioned leader of this list is Sweden, whose spending in 2010 amounted to over 36 635 thousand euro, and 92% of that expenditure was related to the vocational trainings. On the 2nd place is Austria, which in the year 2010, spent 6 882 thousand euro on this kinds of trainings, and 5 392 thousand euro on economic actors in trainings (78%) only. On the 3rd place in France, which spent 4 506 thousand euro on that purpose, almost all expenses went on vocational trainings,
- In case of the level of expenditure on environmental training per capita in agriculture - Sweden is on the 1st place, where the level of expenditure per employee in 2010 amounted to 617 Euros. Belgium, on the 2nd place in the list above, and fourth in previous ones, in the year 2010 allocated 70 Euros for training courses. Austria, which in the first ranking, was on the 2nd, occupies the 3rd place, but the difference in spending is huge - because the level of expenditure per employee in Austria is almost 10 times lower than in Sweden.

Based on the above we can conclude that the sustainability level in agriculture is the highest for Sweden – taking account the above indicators, Sweden has the highest places in three of them. We can also conclude that agriculture in Austria and France is characterized by quite high level of sustainability. Unfortunately polish agriculture is quite far away for the “sustainable agriculture” description. But in comparison to selected countries (Italy, Hungary, Croatia and Slovenia), polish agriculture seems to be more sustainable. On the other hand, in this paper, the size of the indicators for only one group defining the level of sustainability was examined. It would be useful to also examine the levels of environmental spending, environmental taxes, innovation expenditure, as well as the level and type of waste and greenhouse gas emissions and pollutants generated by UE countries agriculture, in order to fully assess which agriculture of UE countries is a sustainable agriculture. Therefore the above issues will be the subject of further research in this field.

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