Global challenges for sustainable agriculture and rural development in Slovakia

Globálne výzvy trvalo udržateľného poľnohospodárstva a rozvoja vidieka na Slovensku

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Abstract

The paper is focused on the evaluation of economic, social and environmental challenges of sustainable agriculture. The selected indicators of the economic challenges of sustainable agriculture imply that agriculture in Slovakia is not in long term be able to ensure competitiveness in the European market, gross agricultural output is characterized by a faster decline in animal production than in crop production and the value of import of agri-food commodities is higher than the value of export. According to selected indicators of social challenges of sustainable agriculture the number of persons working in agriculture has decreasing tendency in last years. The evaluation of selected indicators of environmental challenges of sustainable agriculture implies that area of organic agriculture is the most widely applied sub-measure within the measure agri-environmental payments. For ensuring the balance of the three mentioned dimensions of sustainable agriculture is necessary to increase of local production and consumption of local products, to ensure the protection of nature and landscape, to ensure rural development and to increase the employment opportunities in countryside.

Keywords: agri-environmental support, economic challenges of sustainable agriculture, employment in agriculture, environmental challenges of sustainable agriculture, gross agricultural output, less favoured areas, NATURA 2000, social challenges of sustainable agriculture, sustainable agriculture

Abstrakt

Príspevok je zameraný na hodnotenie ukazovateľov ekonomických, environmentálnych a sociálnych výziev trvalo udržateľného poľnohospodárstva. Z vybraných ukazovateľov ekonomickej výzvy trvalo udržateľného poľnohospodárstva vyplýva, že poľnohospodárstvo Slovenska nie je z dlhodobého hľadiska schopné zabezpečiť konkurencieschopnosť na európskom trhu, hrubá poľnohospodárska produkcia sa vyznačuje rýchlejším poklesom živočíšnej produkcie ako rastlinnej produkcie a hodnota dovozu agropotravinárskych komodít je vyššia ako hodnota vývozu. Podľa vybraných ukazovateľov sociálnych výziev trvalo udržateľného poľnohospodárstva dochádza každoročne k úbytku zamestnancov v poľnohospodárstve. Z hodnotenia vybraných ukazovateľov environmentálnej výzvy

trvalo udržateľného poľnohospodárstva je zrejmé, že výmera ekologického poľnohospodárstva je najrozšírenejším podopatrením v rámci opatrenia agroenvironmentálne platby a produkcia obnoviteľnej energie z poľnohospodárstva a lesníctva za posledné roky stúpa. Na zabezpečenie rovnováhy týchto troch spomínaných dimenzií je nevyhnutné zvýšiť miestnu produkciu a spotrebu miestnych produktov, chrániť prírodu a krajinu, zabezpečiť rozvoj vidieka a zvyšovať možnosti zamestnanosti na vidieku.

Kľúčové slová: agroenvironmentálna podpora, ekonomické výzvy trvalo udržateľného poľnohospodárstva, environmentálne výzvy trvalo udržateľného poľnohospodárstva, hrubá poľnohospodárska produkcia, NATURA 2000, sociálne výzvy trvalo udržateľného poľnohospodárstva, trvalo udržateľné poľnohospodárstvo, zamestnanosť v poľnohospodárstve, znevýhodnené oblasti

Detailed abstract

Pri zabezpečení trvalo udržateľného poľnohospodárstva sú dôležité tri hlavné myšlienky: ekonomicky životaschopná produkcia potravín, ochrana životného prostredia a sociálnych potrieb. Cieľom príspevku je hodnotenie ukazovateľov ekonomických, environmentálnych a sociálnych výziev trvalo udržateľného poľnohospodárstva. Pri riešení sa vychádzalo z analýzy „tvrdých dát“ za celé územie Slovenska. Primárnymi údajmi boli údaje zo Štatistického úradu SR, Ministerstva pôdohospodárstva a rozvoja vidieka SR a Eurostatu. Sekundárnymi údajmi boli údaje z Ekonomického poľnohospodárskeho účtu. Slovenské poľnohospodárstvo prechádzalo za posledné roky zložitým vývojovým obdobím recesie a v súčasnosti pretrváva v stagnácii rozhodujúcich ekonomických a výrobných ukazovateľov. Z vybraných ukazovateľov ekonomickej výzvy trvalo udržateľného poľnohospodárstva vyplýva, že poľnohospodárstvo Slovenska nie je schopné dlhodobo vyprodukovať primeranú úroveň zisku a tým zabezpečiť konkurencieschopnosť na globálnom trhu európskej únie. Slovenské poľnohospodárstvo sa v tvorbe hrubej pridanej hodnoty umiestnilo na konci spomedzi všetkých štátov Európske únie. Hrubá poľnohospodárska produkcia sa vyznačuje rýchlejším poklesom živočíšnej produkcie ako rastlinnej produkcie, vývoj zahraničného agropotravinárskeho obchodu je poznačený zápornou bilanciou, teda hodnota vývozu je nižšia ako hodnota dovozu a zberové plochy takmer všetkých plodín poklesli (okrem zberových plôch kukurice a olejnín). Podľa vybraných ukazovateľov sociálnych výziev trvalo udržateľného poľnohospodárstva dochádza každoročne k úbytku zamestnancov v poľnohospodárstve a najsilnejšou vekovou kategóriou je skupina pracovníkov vo veku 50-59 rokov. Z hodnotenia vybraných ukazovateľov environmentálnej výzvy trvalo udržateľného poľnohospodárstva je zrejmé, že výmera ekologického poľnohospodárstva je najrozšírenejším podopatrením v rámci opatrenia agroenvironmentálne platby a produkcia obnoviteľnej energie z poľnohospodárstva a lesníctva za posledné roky stúpa. V záujme zvýšenia konkurencieschopnosti slovenského poľnohospodárstva a životaschopnosti slovenských fariem je potrebné, farmy na Slovensku, ktoré čelia vážnym štrukturálnym problémom, vhodným spôsobom reštrukturalizovať. V tejto súvislosti je taktiež potrebné podporiť generačnú obnovu v poľnohospodárstve, teda podporovať najmä mladých poľnohospodárov. Rovnováhu spomínaných troch dimenzií je možné zabezpečiť optimálnou mierou hospodárenia, zameraním finančných stimulov do inovácií, zvýšením miestnej

produkcie a spotreby miestnych produktov, ochranou prírody a krajiny, zabezpečením rozvoja vidieka a zvyšovaním možnosti zamestnanosti na vidieku.

Introduction

The essence of sustainability is a balance between economic, environmental and social criteria. To achieve this balance is important to increase the competitiveness of agriculture, food and forestry sectors and improve the quality of life in rural areas with emphasis on sustainable development (Stehlo P., Buday Š., 2005).

The increasing the competitiveness of the agricultural sector can ensure through the modernization and innovation of farms, knowledge development and increasing expertise overview.

For increasing the quality of life in the rural areas is necessary the development of the regional infrastructure and human capital in the rural areas and aims to improve the conditions for creating job opportunities in all sectors and diverse the rural economy (Stehlo P., Buday Š., 2007).

According to Lacko-Bartošová (2005), the environmental challenges are focused to improve the environment and landscape and it aims to create the multi-functional agricultural and forestry systems with the positive impact on the environment, nature, and appearance of the land. The support is concentrated in diversity of the plant and animal species, quality improvement of the water, agricultural and forestry land, and mitigation of the climate change consequences.

Materials and Methods

By contribution solving we used analysis of „hard data“ for the whole area of Slovakia and qualitative forecast of data for the whole area of Slovakia. The primary information sources in the evaluation of selected indicators of economic challenges of sustainable agriculture were data from the database of the Statistical Office, Ministry of Agriculture and Rural Development and Eurostat and secondary processed data from the Economic Agricultural Account. In pursuit of selected indicators of social challenges of sustainable agriculture are again based on the data from the database of the Statistical Office. The basis for the evaluation of the selected indicators of environmental challenges of sustainable agriculture was quantitative data of the Agricultural Paying Agency. In addition, we have used by solution the methods and techniques based on the analysis of literature, general statistics and research materials.

Results

Part: Economic challenges of sustainable agriculture

The economic situation in the Slovak agriculture

The agriculture in the Slovak Republic is an integral part of the European economy, where extensive structural changes have been proceeding significantly in recent years. These changes substantially affect the domestic production, the price development and the rural development. Economy of the agriculture in the Slovak Republic as well as economy in each EU country was greatly influenced by the support policy, the prices of agricultural commodities on the world and European

markets, mainly high price volatility, dependence on world cereal production, utilization, stocks and trade forecasts, growth in demand for animal commodities, growth of agricultural inputs.

Table 1. Development of main economic indicators for agriculture, in million €

Tabuľka 1. Vývoj hlavných ekonomických ukazovateľov poľnohospodárstva, v mil. €

	2000	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Income	2029.5	2179.5	2153.7	2459.1	2549.4	2718.9	1965.9	2019.0	2434.6
Costs	2069.3	2145.7	2144.1	2435.7	2475.8	2664.2	2078.7	2032.9	2361.0
Profit/loss	**-39.7**	**33.9**	**9.6**	**23.4**	**73.6**	**54.7**	**-112.8**	**-13.9**	**73.6**
Acquired investments	**208.2**	276.6	448.6	289.4	317.5	648.4	391.9	295.1	381.0

Source: Slovstat

In recent years Slovak agriculture went through the complicated developmental period of recession and currently remains in economic stagnation of its economic and production indicators (table 1):

- profit/ loss has developed variably in response to the change of income and costs,
- negative profit/ loss was reached in the depression years (2009, 2010) and before accession of Slovakia to the EU,
- in the rest years, since accession of Slovakia to the EU, positive profit/ loss was achieved,
- after accession of Slovakia to the EU income has an increasing tendency also due to the support policy, except 2009 and 2010 years, when revenues grew more slowly than costs.

The support to the agriculture had slightly increasing tendency in the most years. In 2011, the support achieved almost € 900 million. The decisive components in the structure of support were (table 2):

- Rural development support – it accounted for 46 %,
- Direct payments – it accounted for 41%,

Table 2. Structure and development of subsidies for agriculture in the years 2004 – 2011, in mil. €

Tabuľka 2. Štruktúra a vývoj podpôr do poľnohospodárstva v rokoch 2004-2011 v mil. €

Type of support	2004	2005	2006	2007	2008	2009	2010	2011
Market oriented expenditures	10.6	127.2	30.9	7.7	7.1	39.8	13.6	13.1
Intervention measures	0.0	0.0	111.2	0.0	0.0	0.0	0.0	0.0
Direct payments	239.9	215.2	229.6	242.1	370.4	364.1	337.6	365.2
Rural development (out of SAPARD)	87.1	187.0	251.9	295.7	273.6	433.5	481.1	408.5
Operational Programme Fisheries	0.0	0.0	0.0	0.0	0.0	0.5	2.0	1.7
State aid. national payments	11.0	10.1	16.4	9.8	9.1	22.4	18.9	7.9
SAPARD Programme	50.4	54.2	19.9	0.0	0.0	0.0	0.0	0.0
General services directly from the budgetary chapter of the MARD SR	66.5	81.2	79.9	76.7	92.9	86.4	97.6	93.8
PHARE Programme	0.5	2.1	1.3	0.0	0.0	0.0	0.0	0.0
Total	**465.9**	**676.9**	**741.1**	**633.9**	**754.8**	**946.8**	**950.8**	**890.2**

Note.: Rural development – Sectoral Operational Programme Agriculture and Rural Development 2004 – 2006, the Rural Development Plan and the Rural Development Programme 2007 – 2013

Source: Ministry of Agriculture and Rural development of the Slovak republic

Profit or loss or business income of the agriculture

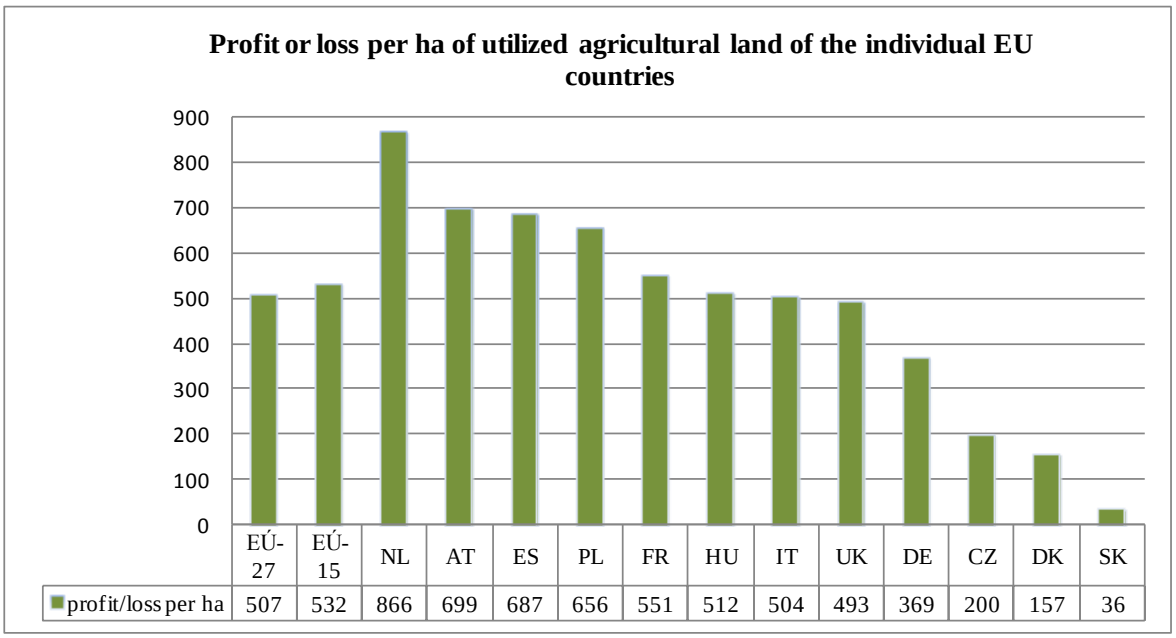


Figure 1. Profit or loss per ha of utilized agricultural land of the individual EU countires

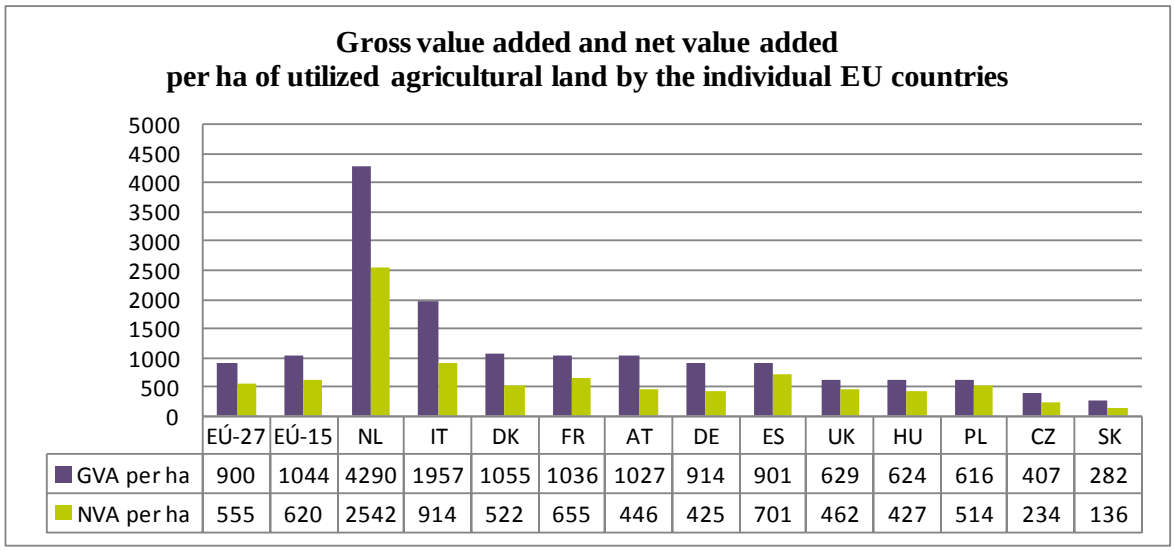
Obrázok 1. Výsledok hospodárenia na ha využívanej poľnohospodárskej pôdy jednotlivých krajín EÚ

(Source: Eurostat, April 2013)

Profit or loss per ha of utilized agricultural land of the individual EU countries was considerably variable. Despite the fact, that Slovak agriculture has posted a positive profit in 2011, its value was 14.1-fold lower than the EU-27 average and Slovakia reached € 36 per ha. In the Czech Republic profit or loss per hectare has reached € 200. Slovak agriculture is unable to produce adequate levels of long-term profits, thereby ensuring competitiveness within the global market of the European Union (figure 1).

Gross value added, net value added

In terms of GVA formation, Slovak agriculture has reached the lowest level compare to all member countries of the EU-27. The GVA level has reached € 282 per ha of utilized agricultural land, what represented only half level of the gross value added of the EU-12 (532 € per ha of agr. land). The highest level of gross value added Slovakia achieved in the year of accession of Slovakia to the European Union. Situation in 2011 is described in the figure 2.



	EÚ-27	EÚ-15	NL	IT	DK	FR	AT	DE	ES	UK	HU	PL	CZ	SK
GVA per ha	900	1044	4290	1957	1055	1036	1027	914	901	629	624	616	407	282
NVA per ha	555	620	2542	914	522	655	446	425	701	462	427	514	234	136

Figure 2. Gross value added and net value added per ha of utilized agricultural land by the individual EU countries (Source: Eurostat, April 2013)

Obrázok 2. Hrubá a čistá pridaná hodnota na ha využívanej poľnohospodárskej pôdy v jednotlivých krajinách EÚ

Gross agricultural output

The development of gross agricultural output in Slovakia is marked by the faster decrease in animal production than crop production and the change in production structure, especially after EU accession. While before accession, animal production was dominant, vice versa, after accession crop production was dominant.

Table 3. Development of Gross agricultural output (GAO) in mil. €, in current prices

Tabuľka 3. Vývoj hrubej poľnohospodárskej produkcie (HPP) v mil. €, v bežných cenách

GAO	2000	2004	2008	2009	2010	2011	2012*
Crop output	672.4	1060.9	1107.2	876.2	892.3	1238.3	1135.5
Animal output	1077.8	1031.3	989.2	767.9	763.5	852.6	882.2
GAO, total	**1750.2**	**2092.2**	**2096.4**	**1644.1**	**1655.8**	**2090.9**	**2017.7**

Source: EAA SR * estimate

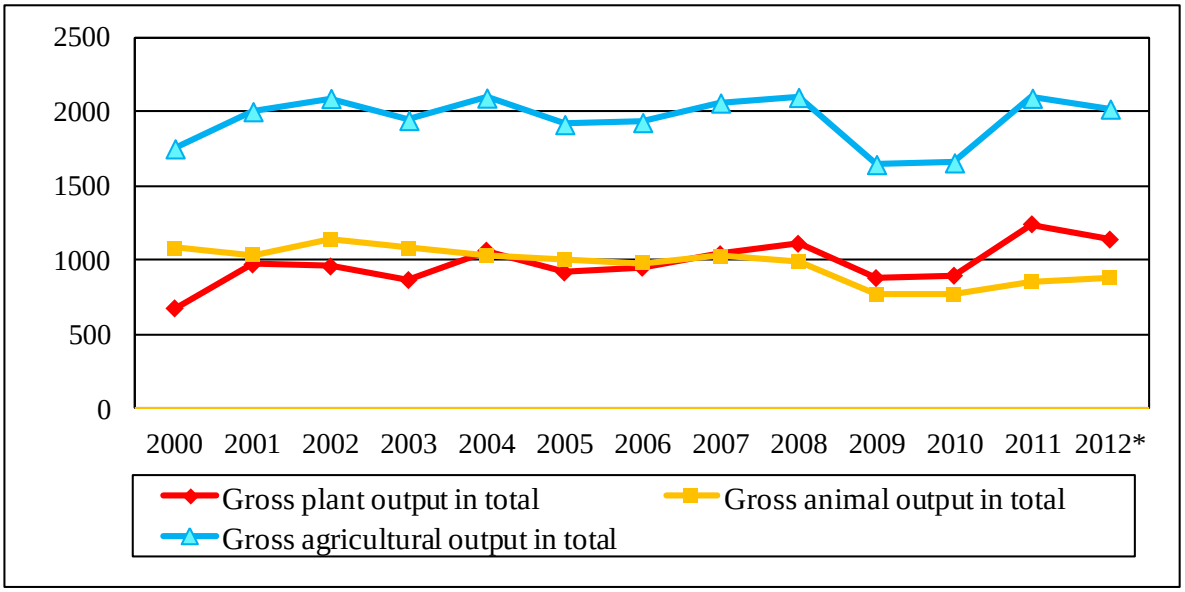


Figure 3. Development of gross agricultural output in 2000 – 2012

Obrázok 3. Vývoj hrubej poľnohospodárskej produkcie v rokoch 2000 - 2012

Gross agricultural output in Slovakia recorded the largest drop in 2009 and 2010. Compared to the previous year the decline has represented almost 20 %. It is estimated, that GAO will not reach pre-crisis levels in 2012, it is assumed that GAO will reach the level about € 2018 million (table 3, figure 3).

Number of farm animals in the Slovak Republic

Decline in livestock production was due to the decrease in almost all categories of animals, except sheep and hens, which number has grown. The sharpest decline over this period was observed in case of pigs, where number of pigs was decreased by 60 % (sows by 70 %). The number of beef cattle had also decreasing tendency and the decline in 2011 compared to 2000 represented 30 % (dairy cows 40 %) (table 4).

Table 4. Number of farm animals in the Slovak Republic, in thousand heads

Tabuľka 4. Vývoj stavov hospodárskych zvierat na Slovensku v tis. ks

Category of animal	2000	2005	2006	2007	2008	2009	2010	2011
Beef cattle, total	646.1	527.9	507.8	501.8	488.4	472.0	467.1	463.4
Cows, total	271.2	229.6	218.7	215.7	211.3	204.1	204.4	201.3
Dairy cows	242.5	198.6	185.0	180.2	173.9	162.5	159.3	154.1
Pigs, total	1 488.4	1 108.3	1 104.8	951.9	748.5	740.9	687.3	580.4
Sows	131.0	79.5	76.9	62.0	44.5	43.9	41.3	37.4
Sheep, total	348.0	320.5	332.6	347.2	361.6	377.0	394.2	393.9
Ewes	211.6	233.2	229.0	231.1	248.1	254.6	263.8	265.0
Dairy ewes	153.8	157.9	151.3	145.0	153.9	160.7	158.7	162.0
Poultry, total (in mil. pc)	13.6	14.1	13.0	12.8	11.2	13.6	12.9	11.4
Hens	5 846.0	5 591.2	5 702.2	5 773.5	5 556.3	6 252.2	6 266.2	6 183.4
Chickens	7 139.3	7 875.6	6 743.9	6 507.7	5 175.4	6 851.8	6 253.1	4 746.2
Gooses	40.3	34.7	33.5	36.5	29.0	31.8	32.3	27.5
Ducks	246.4	249.7	238.8	240.0	193.9	178.9	179.2	170.6
Cows, total	271.2	229.6	218.7	215.7	211.3	204.1	204.4	201.3

Source: Slovstat

Development of harvested crop area in the Slovak Republic

The harvested area of almost all crops decreased, except areas of maize and oilseeds. Compared to 2000, the most significant decrease was observed in case of potatoes (by 60 %) as well as in case of sugar beet (by 43%). The harvested area of cereals decreased by 9 % (mainly rye area by 60 %, barley area by 32 % and oats area by 28 %) (table 5).

Table 5. Development of harvested crop area in the Slovak Republic, in thousand ha

Tabuľka 5. Vývoj zberových plôch plodín v Slovenskej republike v tis. ha

Crops	2000	2005	2006	2007	2008	2009	2010	2011
Cereals, total	812.4	794.6	732.9	784.4	799.4	768.7	683.3	741.5
Wheat	405.2	373.0	349.1	360.7	373.7	379.2	342.1	362.8
Barley	199.4	204.2	184.5	209.9	213.1	195.8	133.0	135.7
Rye	31.5	24.2	12.5	20.7	25.9	19.6	15.9	13.0
Oat	20.9	19.2	19.5	20.8	17.0	15.9	14.8	15.2
Maize	145.0	154.1	151.0	157.3	154.2	144.2	166.6	202.0
Industrial sugar beet	31.7	33.2	27.7	18.9	11.1	16.0	17.9	18.1
Potatoes	27.1	19.1	18.4	17.8	14.3	11.6	11.0	10.4
Oil crops	173.9	213.5	250.4	231.4	249.3	267.7	267.0	257.4

Source: Slovstat

Agri-food foreign trade in the Slovak Republic

Development of agri-food foreign trade is annually characterized by a negative balance. It means that the value of export is lower than the value of import. The value

of foreign trade negative balance reached the highest value in 2008 -2011.

Table 6. Development of the agri-food foreign trade of the SR, in mil. €

Tabuľka 6. Vývoj agropotravinárskeho zahraničného obchodu SR, v mil. €

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Export	802.0	843.7	1 142.5	1 556.3	1 779.0	1 999.8	2 036.8	1 932.8	2 162.0	2 918.6	3 773.4
Import	1 415.5	1 341.6	1 663.6	2 222.0	2 274.1	2 694.2	2 908.5	2 782.2	3 119.9	3 723.2	4 182.9
Balance	-613.5	-497.9	-521.2	-665.7	-495.2	-694.4	-871.7	-849.4	-957.9	-804.5	-409,5

Source: Slovstat

In 2012, value was reduced in half. The opposite situation was observed in the balance of trade in agricultural products, particularly in the last three years, where export is higher than import, which is unfavourable for the SR in terms of resource base for the food industry as well as the employment (table 6, figure 4).

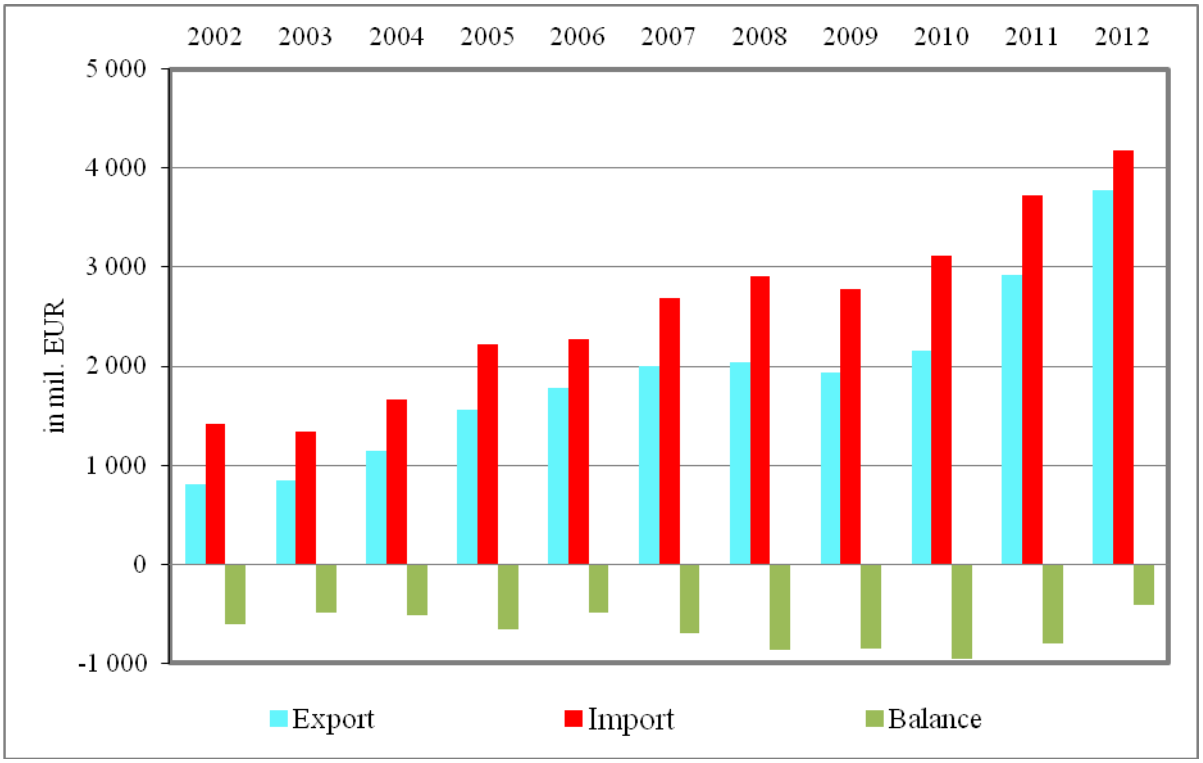


Figure 4. Development of agri-food foreign trade of the Slovak Republic

Obrázok 4. Vývoj agropotravinárskeho zahraničného obchodu v Slovenskej republike

Source: Slovstat

Part: Social challenges of sustainable agriculture

The employment in agriculture

In Slovakia, the number of persons working in agriculture has a decreasing tendency.

Table 7. Development of employment in agriculture, in thousand

Tabuľka 7. Vývoj počtu pracujúcich v poľnohospodárstve v tis. osôb

2000	2004	2007	2008	2009	2010	2011
115,2	67.0	75.5	70.8	65.3	56.3	51.6

Source: Slovstat

There were 108.9 thousand persons working in agriculture in 2002. In 2011, the number of workers has been reducing more than half, at 51.6 thousand. The cause of the decline in employment consists in the strong run-down of agricultural production, combined with sales crisis in the domestic market, transformation, dissolution of non-agricultural activities and consequently low rate of diversification activities as well as salary unattractiveness (table 7, figure 5).

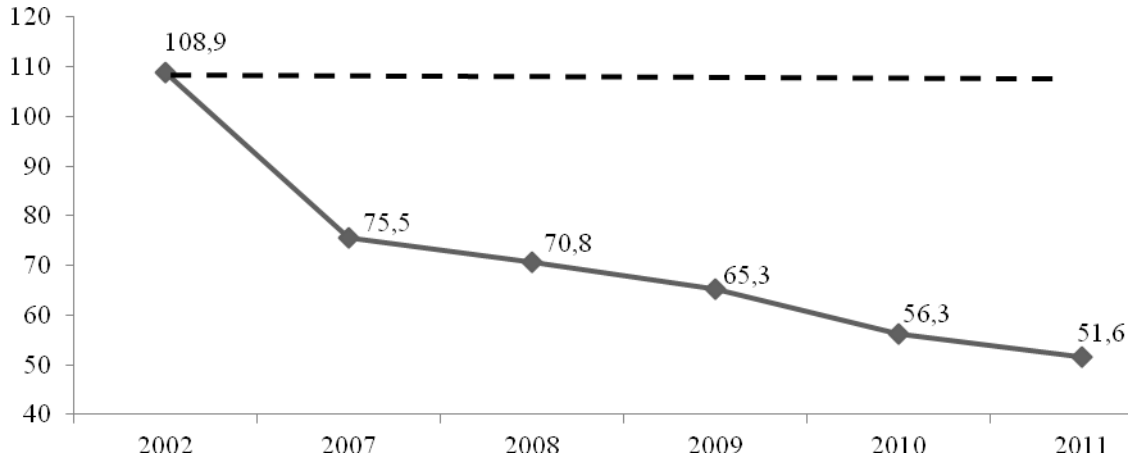


Figure 5. Development of employment in agriculture, in thousand

Obrázok 5. Vývoj počtu pracujúcich v poľnohospodárstve v tis. osôb

In terms of age structure, the strongest age group in 2002 – 2004 was a group of workers aged 40 – 49 years. Since 2005, group of workers aged 50-59 years is dominant and in 2011, this group makes up almost 40.3 % of all workers in agriculture. In the long run (since 2000) in the age structure of workers of all ages a drop in number of persons occurred, with the exception of category 60 and over, in which the number of workers slightly increased.

Part: Environmental challenges of sustainable agriculture

Environmental challenges are focused on improving the environment and landscape and their aim is to create multifunctional agricultural and forestry systems with positive impacts on the environment, nature and landscape. Support is focused on the diversity of plant and animal species, improvement of water quality, improvement of agricultural and forest soil and mitigation of climate changes effects.

Table 8. Land area in Slovakia (hectares)

Tabuľka 8. Výmera pôdy SR (v ha)

Indicator	**2010**	**2011**	**Index 2011/2010**
Agricultural land	1 921 961	1 929 698	100,40
of that: arable land	1 354 436	1 358 423	100,29
permanent crops	23 468	22 132	94,31
other area including gardens	31 028	31 372	101,11
permanent meadows and pastures	513 029	518 230	101,01

Source: Statistical Office of the Slovak Republic SR; Report on Agriculture and Food industry in the Slovak Republic 2011 (Green Report)

The largest area of agricultural land in Slovakia covers arable land (70,4 %), permanent meadows and pastures have 26,9 % of agricultural land and the smallest area have gardens 1,6 % and permanent crops only 1,1 % (table 8).

Less Favoured areas

Slovakia is mostly mountainous country with a high share of low productive soils and soils affected by specific handicaps like waterlogged soil, sandy soil or gravelly soil. LFA represent an area 1 245 540 hectares, i.e. 65 % of agricultural land, from which the largest area have mountain areas, 25 % of agricultural land. Other less favoured areas cover 21 % and areas affected by specific constraints 19 % of agricultural land area. Less favoured areas are continuous territorial units, in which the influence of unfavourable conditions, altitude, slope and low soil fertility and other unfavourable natural conditions eventually in connection with specific local economic and social conditions the costs per unit of production in agricultural production lasted above-average. Continuing agricultural activities in worse natural conditions is the basic assumption for maintaining of settlement in these areas with acceptable incomes of rural population in the extent to fulfil its landscape, environmental and social functions in compliance with the set conditions (table 9, figure 6).

Table 9. Cumulative data of LFA measures implementation in Slovakia at the end of 2011

Tabuľka 9. Kumulatívne údaje o implementácii opatrení LFA v SR ku koncu r. 2011

Type of area	Number of supported farms	Supported area (hectares)	% of agricultural land in Slovakia
Mountain areas	2 875	472 829	25
Other less favoured areas	1 618	413 457	21
Areas affected by specific constraints	1 618	359 254	19
Total	**6 111**	**1 245 540**	**65**

* Sum does not include double counting of farms, which are farming in both classified areas
Source: Section of direct subsidies APA, Annual Progress Report for RDP 2007-2013 for 2011

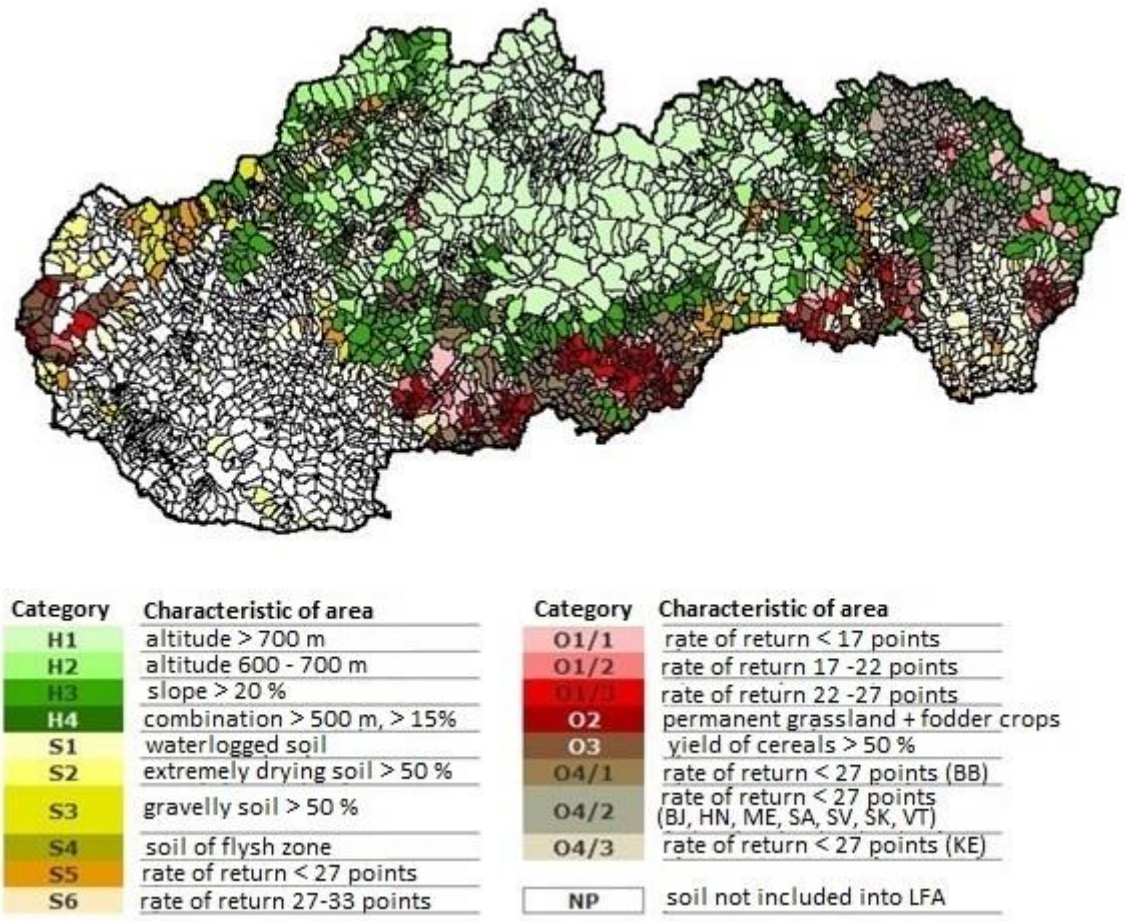


Figure 6. Image of Less Favoured Areas in Slovakia

Obrázok 6. Zobrazenie znevýhodnených oblastí na Slovensku

Agri-environmental support

Agri-environmental support integrates agricultural and environmental policies targeted to the greening of agricultural land management, protection of the fundamental components of the environment, mitigating climate change, preserving biodiversity, natural and cultural heritage.

Table 10. Area supported under sub-measures within the measure "Agri-environmental payments" (as of 31 December 2011)

Tabuľka 10. Výmera podporovaných plôch podľa jednotlivých podopatrení v rámci agroenvironmentálnych platieb (ku koncu r. 2011)

Type of commitment	**Number of supported subjects**	**Total supported area (ha)**
Organic farming	277	146 836.89
Integrated production	197	12 452.23
Basic support	240	116 295.79
Soil protection measures (on arable land, in vineyards and orchards; grassing)	20	24 400.29
Protection of biotopes of natural and semi-natural grasslands	178	70 042.21
Protection of selected bird species biotopes	117	43 639.90
Breeding and preserving of endangered animal species	121	-
Total:	**1 150**	**413 667.31**

Source: Division of Direct Payments of the APA, Annual Progress Report on the RDP SR 2007 – 2013 for the year 2011

In cumulative terms, in the period 2007-2011, the area covering 146 836.89 hectares of agricultural land in Slovakia was supported within the sub-measure "Organic farming". It is the most widely applied sub-measure within the measure "Agri-environmental payments". The second most widely applied sub-measure was "Basic support" that in cumulative terms, in the years 2007 – 2011, covered 116 295.79 ha. "Basic support" sub-measure specifies management requirements for arable land and permanent grassland, which represent a transition between standard requirements of Cross Compliance (GAEC, SMR) considering the national legislation of the Slovak Republic and management practices of organic farming. In short, it is a stage of extensive production on arable land and permanent grassland (limits on consumption of fertilizers and banned application of specified groups of pesticides).

"Basic support" sub-measure has a horizontal scope in order to protect and improve a quality of water resources and was targeted to vulnerable areas preferably. "Integrated production" sub-measure (orchards, vineyards and vegetables) recorded the lowest supported area in comparison with other sub-measures of "Agri-environmental payments" measure, in cumulative terms 12 452.23 ha. Integrated production is an intermediate step of environmentally friendly practices between standard land management satisfying Cross Compliance conditions (considering the national legislation of the Slovak Republic too) and organic farming. Soil protection measures (protection against erosion on arable land, in vineyards and orchards; grassing of arable land) in Slovakia were applied to the total area of 24 400.29 ha of agricultural land. Nearly half of the agricultural land in Slovakia is threatened by potential water erosion. The total area supported, in cumulative terms from 2007 to 2011, under the sub-measure "Protection of biotopes of natural and semi-natural grasslands" reached 70 042.21 ha. Under the sub-measure "Protection of selected bird species biotopes" the total area of 43 639.90 ha was supported in the period 2007 – 2011. The support was granted to farmers applying specific management of

agricultural land (arable land and permanent grassland) in Natura 2000 (SPA) areas with the occurrence of selected species of birds (Table 10).

There are two types of the NATURA 2000 areas:

1. The Sites of Community Importance (SCIs) – the area of the SCIs on agricultural land is 42 322 hectares. The SCI areas within the 4th and 5th degree of nature protection are eligible for the support under the measure since the beginning of the program implementation, and their area is 3707 hectares.
2. The Special Protection Areas (SPAs) – at the end of 2010 the total area of the declared SPAs on agricultural land represents 292 193.73 hectares, on this area there are 36 SPAs.

Support for specific methods of management in Natura 2000 sites should contribute to sustainable development with the aim to protect the natural environment and landscape, with the impact on: biodiversity, conservation of high nature value areas (HNV), water quality, and to prevent climate change.

Biomass production as important aspect of struggle against climate change

Slovak Republic committed to achieve 14 % of consumption from renewable energy sources (RES) by 2020. The share of renewable energy sources of primary energy consumption was just around 9.5 % in the year 2010.

Table 11. Development of renewable energy production originated in agriculture and forestry in the years 2007-2011 in Slovak Republic (in ktoe)

Tabuľka 11. Vývoj produkcie obnoviteľnej energie z poľnohospodárstva a lesníctva v rokoch 2007-2011 v Slovenskej republike (v ktoe)

Indicator	2007	2008	2009	2010	2011
Biodiesel	40,65	129,02	89,25	77,77	79,53*
Bioethanol	15,05	47,15	59,19	63,70	65,21
Biofuels production from agriculture	55,70	176,17	148,44	141,47	144,74
Wood biomass	484,00	502,00	647,00	740,00	n.a.

Note: *forecast
Source: EurObserv'ER

In Slovakia the production of biodiesel almost doubled during years 2007-2011 and bioethanol production increased more than quadruple (433 %). Total renewable energy production derived from agricultural crops reached level of 145 ktoe that is growth by 260 % (Table 11) compared to the year 2007.

Discussion

In order to increase the competitiveness of Slovak agriculture and viability of Slovak farms it is needed to restructure farms in Slovakia that are facing serious structural problems, in appropriate manner. Low market participation and low rate of agricultural activities diversification are regarded as structural problems. In this

context, it is also necessary to support generation renewal in agriculture, therefore to support especially young farmers.

Support in this regard it is needed to refer to material and / or nonmaterial investments, which improve the overall performance of the farm, relating to the processing, market introduction and / or development of agricultural products.

For ensuring the balance of the three dimensions of sustainable agriculture we must:

- analyse and characterize exactly in which real state are found,
- seek to find a compromise solution for their mutual balanced connection,
- use of natural resources, respectively production potential in the way, that not violate the natural fertility of soil,
- ensure the protection of nature and landscape in accordance with EU regulations,
- form better living conditions in rural areas,
- increase the employment opportunities of workers in agriculture i.e. creating family farms, small farms, encourage the establishment of new farms, for example through forming appropriate credit conditions for start of production, the orientation of support policies to increase the interest of young farmers to begin farming,
- find the optimal level of farming to ensure the production for another agricultural use, let´s say for food production purposes and biomass use,
- focus of financial stimulus into innovations and mutual cooperation,
- increase of local and domestic production and consumption of local products for transport costs reduction, lower energy costs and pollution,
- further agricultural policy should be aimed to the maintenance of agricultural activities also in LFA and compensation of farmers' income for environmental services.

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