

## Socio-economic aspects of food consumption in Slovakia: overview of contemporary issues

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### Summary

The aim of this paper is to describe the economic factors affecting food consumption, including issues relating to self-sufficiency and land potential of Slovakia to ensure adequate food. Food habits and preferences in Slovakia are shaped by cultural traditions, personal availability and accessibility. In 2012, net household income and expenditure increased at a similar growth rate by 1.6%, and consumer expenditure increased by 2.0% in Slovakia. Food, beverage and tobacco expenditure increased (3.4%) with a faster rate of growth in expenditure for foods and non-alcoholic beverages compared to expenditure on alcoholic beverages and tobacco. The share of consumer spending on foods, beverages and tobacco, in total consumer expenditure increased to 28.0%. Excessive consumption, i.e. consumption above the recommended food allowances (RFA), were noted for pork and poultry meat. Insufficient consumption in terms of RFA were noted for beef, fruits, legumes, potatoes, milk and dairy products, fish, vegetables and cereals (flour). According to preliminary calculations, in terms of food self-sufficiency of Slovak population, areas of 10485 km<sup>2</sup> of arable land and 3410 km<sup>2</sup> of permanent grassland are necessary to cover food security, representing about 66% of currently registered agricultural soil in Land Parcel Information System (LPIS).

### Keywords

food consumption; food self sufficiency; primary agricultural land; expenditure; income

Contemporary food production and consumption cannot be regarded as sustainable [1–3]. Facing up to the growing global population, impacts of climate change on agriculture and increasing land-use conflicts, sustainability problems arising from food systems will become more serious in the future. The unsustainability issues arise from industrialization and globalization of agriculture and food processing, from the shift of consumption patterns toward more dietary animal proteins, from new types of food entailing considerable costs and, paradoxically, from the lack of food security. Along with these drivers, a picture of food consumption in Slovakia is created. Food habits and preferences in Slovakia are shaped by cultural traditions, physiological needs, as well as by personal availability and accessibility. The price is a major decision criterion, but food preferences also differ by household characteristics such as age, income, education, family type and labour-force status.

Contrary to individual and national differences, it is possible to identify certain general food-consumption trends relevant to sustainable development, which are already evident in most European Union (EU) countries. Probably the most important development, in terms of impact on climate and health, is the increase in meat consumption and dairy products during the last decade. From social point of view, home meals and their preparation are losing importance, while convenience products, fast food and restaurant meals acquire importance [4, 5]. Nowadays, out-of-home consumption accounts for a significant and growing proportion of European food intake. In spite of this fact, high-quality and health-oriented products, as well as organic foodstuffs, are becoming increasingly important, although the market share of organically grown products remains very low.

According to the United Nations, the world's population is expected to reach more than 8 billion by 2025 and more than 9 billion by 2050 [6].

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As the global population increases and demand for food increases, there is a pressure on land resources. Land can also be considered a finite resource on Earth. Expansion of agricultural land has an impact on biodiversity and contributes to deforestation. The Food and Agriculture Organization of the United Nations estimates that, in coming decades, cropland will continue to be lost to industrial and urban development, along with reclamation of wetlands and conversion of forests to cultivation, resulting in the loss of biodiversity and increased soil erosion.

In addition to population growth, migration from rural to urban areas, mainly in developing countries, will have significant effects on food consumption patterns. About 52% of the world's population currently lives in urban areas but, by 2050, 67% will live in cities. Rapid economic growth in some developing countries over the past several decades is supporting the emergence of a relatively wealthy, generally urban middle class, estimated at 2 billion people. While economic progress is laudable, its impacts on natural resource use are substantial. Wealthier, more urbanized populations, have transitioned toward more diversified diets, increasing their consumption of not only meat but also vegetables and sugars – all of which require much more water and energy per unit of energy produced [7]. The lifestyles in industrialized countries are particularly characterized by overuse of both renewable and fossil resources. At the same time, the rising demand for non-food products (feed, fuel) is putting additional pressure on agricultural production and on land use.

## MATERIAL AND METHODS

All data evaluated within the study were obtained from publications of the Statistical Office of the Slovak Republic, current departmental research and from the development project “Development of land market and the market, particularly in terms of EU” and “Situation and outlook reports” solved in Research Institute of Agricultural and Food Economics (RIAFE, Bratislava, Slovakia) [8, 9]. Data on income, expenditure and consumption were obtained from publications “Income, expenditures and consumption of private households in Slovakia” and “Food consumption in the Slovak Republic” [10, 11]. Food consumption data were obtained by two methods: food balance sheets (FBS) and household budget surveys (HBS).

Food balance sheets are constructed by the Food and Agriculture Organization of the United

Nations (FAO UN) from the national accounts of the supply and use of foods, and are calculated from the food produced in and imported into countries minus the food exported net of imports, fed to animals or otherwise not available for human consumption, divided by the population size. FBS data provide information about average availability per person. Generally, FBS are constructed for primary crops, livestock and fish commodities up to the first stage of processing in the case of crops, and to the second (and sometimes the third) stage of processing in the case of livestock and fish products. International FBS are prepared and published by FAO UN, the Organization for Economic Co-operation and Development (OECD) and the EU's statistical office Eurostat. Individual countries, including Slovakia, publish their national FBS, which may be different from international FBS.

Household budget surveys are national surveys mainly focusing on consumption expenditure on goods and services, giving a picture of living conditions in the European Union. These are carried out by each Member State and are used to compile weightings for important macroeconomic indicators, such as consumer price indices (used as measures of inflation) and national accounts. The basic unit of data collection and analysis in the surveys is the household.

Economic performance of the country is evaluated using three types of indicators, namely, purchasing power parity, comparative price levels and gross domestic product (GDP) per capita. Through these indicators, Slovakia (via the Statistical Office of the Slovak Republic – SO SR) as a member of the EU, participates in the European comparison programme. The results of the survey are expressed in the form of price level indices (PLI), which are the ratios of purchasing power parities (PPP) to exchange rates. They provide a comparison of countries' price levels relative to the European Union average: if the price level index is higher than 100, the country concerned is relatively expensive compared to the EU average and vice versa, while if the price level index is lower than 100, then the country is relatively cheap compared to the EU average. The EU average is calculated as the weighted average of the national PLI, weighted with the expenditures corrected for price level differences.

In terms of the production potential, Research Institute of Soils Science and Protection (Bratislava, Slovakia) divided farmland to primary agricultural land, secondary agricultural land and other agricultural land. Primary agricultural land is an area of strategic purpose, which should be left for

direct agricultural use, i.e. the land area required to supply food to the current population of Slovakia. This is taken as 'family silver' of the country, necessary for agriculture and food production. From the methodological point of view [12], it is the soil registered in the Land Parcel Information System (LPIS). In terms of inclusion in typological, production categories of agricultural land resources, they are arable land (O1, O2, O3, O4, O5, O6, O7) and alternating fields – average production fields and grassland production fields (OT1). It is the land with the highest production potential, where ecological soil-quality units (ESQU) range from 38 to 100 points, with the value of 70.35 points. In Slovakia, primary agricultural land occupies 13895 km<sup>2</sup>, representing about 66% of currently registered agricultural soil in the LPIS.

Based on soil expert knowledge [13], RIAFE developed a model of food self sufficiency calculation for Slovakia, which was based on the following aspects:

- basic needs and recommended food allowances of foodstuffs in kilograms per capita,
- forecast of production, supply and consumption of cereals, sugar beet, oilseeds and potatoes for the marketing year 2010/2011,
- basic needs of livestock feed (adjusted for numbers of animals projected by RIAFE),
- own statistical data and expert estimates.

The present state does not consider the export or import of particular products, but rather is an own food self sufficiency of basic foodstuffs and raw materials. A share of 1900 m<sup>2</sup> of arable land per was calculated for Slovakia (5.5 millions inhabitants were estimated). As methodological approaches, collection of domestic and foreign relevant data, as well as analysis, synthesis and comparison of data presented in tabular, graphical and text forms by mathematical and statistical calculations were used to reach the aims of the study.

## RESULTS AND DISCUSSION

### Food consumption, income and expenditure

Food consumption analysis in Slovakia indicated that dietary habits of Slovak population do not correspond to a healthy lifestyle [14]. From the nutritional point of view, the diet of Slovak population is unbalanced. According to the national statistics, excessive consumption, i.e. higher consumption than recommended food allowances (RFA), was identified in the case of pork, poultry and fats. On the other hand, consumption of beef was insufficient. Consumption of fruits, vegetables and fish was also lower than RFA. The barrier, circumscribing the degree of the consumer freedom decision, was the low disposable income. This can be overcome if the political environment, macro-economic stability and competitive market supported individuals and households to achieve economic and food security.

In 2012, net household income and expenditure increased at a similar pace (1.6%), which was lower than in 2011 (Tab. 1). Consumer expenditure increased (2.0%), and food, beverage and tobacco expenditure once again increased (3.4%) with a faster pace of growth in expenditure for foods and non-alcoholic beverages compared to expenditure on alcoholic beverages and tobacco.

The share of inhabitants' expenditure on food, beverages and tobacco, excluding public catering, in total consumer expenditures increased to 28.0% (by 0.4 percentage points – p.p.) in 2012. The share of expenditures on food and beverages increased by 0.4 p.p., and the share of expenditures for alcoholic beverages and tobacco did not decrease (Tab. 2).

According to the statistical and economic information report 2012 "Agriculture in the European Union", published by the European Commission's Directorate-General for Agriculture and Rural Development in 2012, where expenditures

**Tab. 1.** Development of incomes and expenditures of households in Slovakia.

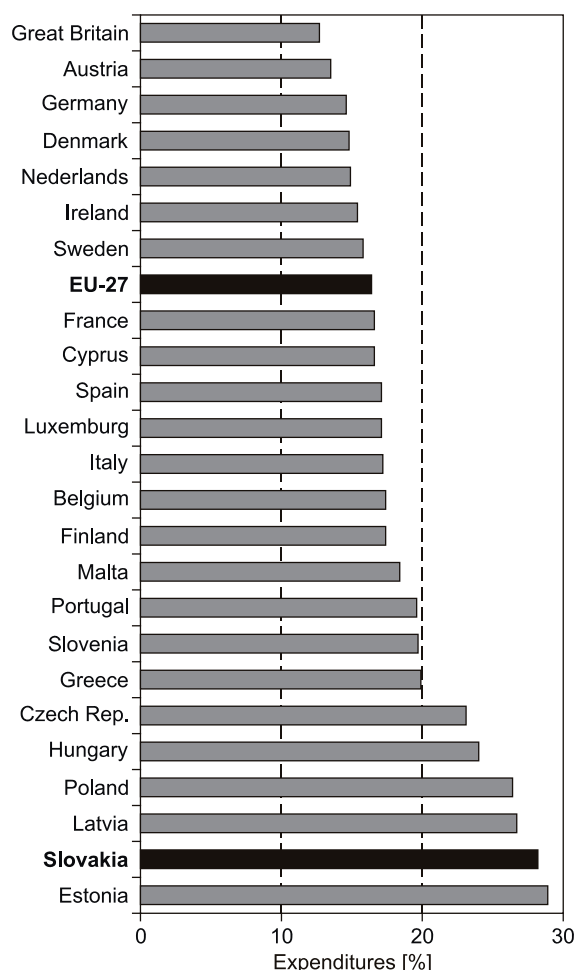
Incomes and expenditures according to COICOP classification	Index			
	2009/2008	2010/2009	2011/2010	2012/2011
Net monetary incomes total	99.7	99.5	103.7	101.6
Net monetary expenditures	94.4	100.4	104.2	101.6
Consumer spending	93.7	101.1	104.4	102.0
Food and non-alcoholic beverages	92.4	103.4	102.7	103.6
Alcoholic beverages and tobacco	99.5	113.9	99.6	101.6
Food, beverages, tobacco	93.1	104.6	102.3	103.4

Source: Statistical Office of the Slovak Republic [10], RIAFE calculations [16].  
COICOP – Classification of individual consumption by purpose.

**Tab. 2.** Share of foods, beverages and tobacco in consumer spending.

Share of food, beverages and tobacco in consumer spending [%]	2009	2010	2011	2012
Food and non-alcoholic beverages	24.2	24.8	24.4	24.8
Alcoholic beverages and tobacco	3.0	3.4	3.3	3.3
Food, beverages, tobacco	27.2	28.2	27.7	28.1

Source: Statistical Office of the Slovak Republic [10], RIAFE calculations [16].

**Fig. 1.** Share of consumer spending on food, beverages and tobacco in the total consumer expenditures of households in EU-27 in 2010.

Source: European Commission [18].

Note: The data on expenditures of households for food, beverages and tobacco in the Slovak Republic were entered from statistics of family accounts, implemented by the Statistical Office of the Slovak Republic, the data for Bulgaria, Romania and Lithuania being not at disposal.

of inhabitants of the European Union 27 countries (EU-27) of foodstuffs, drinks and tobacco in 2010 (last data) are compared, Slovakia spends on average 28.2% of its consumer expenditures on food, beverages and tobacco, which is still a high value, also with regard to the income situation of inhabitants of Slovakia (Fig. 1).

According to the estimate of the Statistical Office of the Slovak Republic on food consumption (obtained using FBS) in kilograms per inhabitant of Slovakia in 2012, consumption of meat (in the value meat with bones) decreased year-on-year by 3.8 kg. The trend of decreasing consumption of beef meat continued and its consumption decreased by 0.2 kg year-on-year and continued to remain deeply below the RFA value. Consumption of pork and poultry meat decreased by 1.6 kg and 2.2 kg, respectively, but still exceeded the RFA values. A positive trend was the increase in the consumption of milk and dairy products by 1.7 kg, fruits by 1.5 kg, vegetables by 0.3 kg and cereals (in the value of flour) by 0.2 kg. In contrast, a negative phenomenon was the decrease in the consumption of potatoes by 1.5 kg. Fat consumption increased by 0.1 kg. Food consumption data are presented in Tab. 3.

Looking at the composition of Slovakia household final consumption expenditure over time, the shares of the main consumption items changed only gradually over the past five years (Fig. 2). The largest component, household final expenditure, represented expenditures on food, beverages and tobacco (22.2% in 2012), together with housing, water, electricity, gas and other fuels (20.4% in 2012). Together with the third largest component, transport (8.1% in 2012), these accounted for about 50% of total expenditure.

However, there are some trends, such as a rising share of expenditure on housing, water, electricity, gas and other fuels, and on health and transport, and falling shares on clothing and footwear; furnishings, household equipment and routine home maintenance, and on other net expenditures. The shares for food and non-alcoholic beverages, health, actual and imputed housing rentals, and water supply and dwelling services, increased between 2008 and 2012, which is consistent with the fact that expenditure on basic needs tends to be more resilient than other consumption items.

An increase in expenditures on food, beverages and tobacco in 2012 was mainly caused by the increase in expenditures on meat, milk, cheeses and eggs, bread, cereals and soft drinks. Expenditures decreased mainly for vegetables, including potatoes and fruits.

**Tab. 3.** Consumption of selected types of foodstuffs per inhabitant in the Slovak Republic, in kilograms.

Food type	Actual state					Difference 2012–2011	RFA	Acceptable interval of rational consumption
	2008	2009	2010	2011	2012			
Meat in carcass weight	58.2	58.7	55.8	56.3	52.5	–3.8	57.3	51.6–63.0
Fish	4.9	4.6	5.1	4.7	4.8	0.1	6.0	
Milk and dairy products	153.0	153.8	162.8	156.9	158.6	1.7	220.0	206.0–240.0
Cereals in value of flour	84.2	81.0	80.3	84.2	84.4	0.2	98.5	94.0–103.0
Fats total	23.0	23.6	23.1	22.1	22.2	0.1	22.0	19.8–23.1
Potatoes	55.1	53.8	47.6	49.5	48.0	–1.5	806	76.3–84.9
Legumes	1.6	1.5	1.6	1.6	1.6	0	2,6	2.1–3.2
Vegetables*	100.6	102.5	94.6	100.6	100.9	0.3	127.9	116.9–138.9
Fruits**	65.0	55.3	53.6	50.6	52.1	1.5	96.7	86.7–106.7

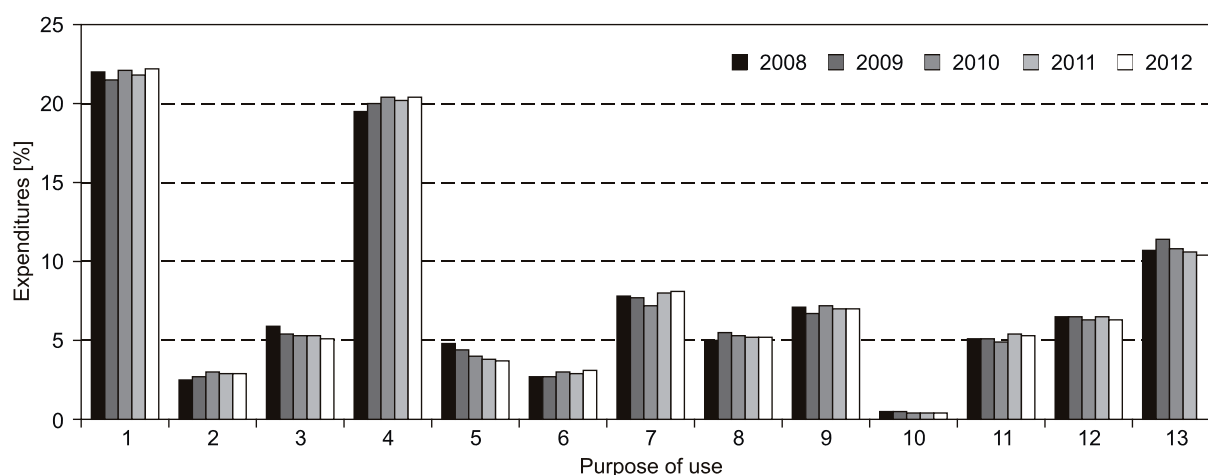
Source: Food consumption, Statistical Office of the Slovak Republic [11].

\* – vegetables and vegetable products in fresh value, \*\* – fruits and fruit products total in fresh value without nut consumption.  
RFA – recommended food allowances.

In Slovakia, similar to some other countries, food consumption is closely linked with the purchasing power of inhabitants, together with the price levels of food and beverages. Generally, the price level reflects the measure of the economic development and growth of the country. Price levels for food, beverages and tobacco vary considerably across the EU member states. In 2012, the prices for food and non-alcoholic beverages in Denmark were 143% of the EU average, while in Poland they were 61% of the EU average. Alcohol was priced in Finland at 175% of the EU average, but at 67% in Bulgaria. For tobacco, the highest

prices were observed in Ireland (199% of the EU average), while the lowest were recorded in Hungary (52%).

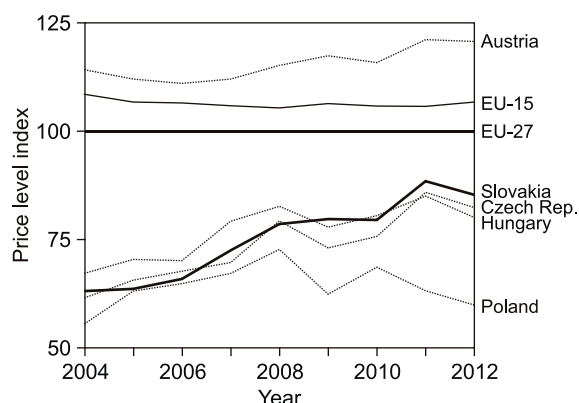
Based on the Eurostat comparative research (data for 2004–2012), the average food consumer prices in Slovakia are still below the EU-27 countries average. Although price level indices of food in Slovakia reached points of 88.5 in 2011, price level indices of oils and fats were higher than the average of the EU-27 in almost all of the studied years (except 2004). It means that this group of products was more expensive in Slovakia compared to the average EU-27 prices. The highest

**Fig. 2.** Year-on-year changes in the basic structure of consumer expenditures of private households in 2008–2012.

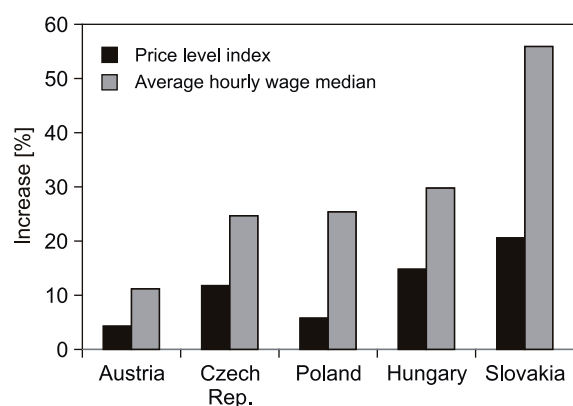
Source: Statistical Office of the Slovak Republic [10], RIAFE calculations [16].

Purpose of use: 1 – food and beverages, 2 – alcoholic beverages and tobacco, 3 – clothing and footwear, 4 – housing, water, electricity, gas and other fuels, 5 – furnishings, household equipment and routine home maintenance, 6 – health, 7 – transport, 8 – postal services and telecommunications, 9 – recreation and culture, 10 – education, 11 – hotels, coffee bars and restaurants, 12 – miscellaneous goods and services, 13 – other net expenditures.





**Fig. 3.** Price level indices for food in European countries in 2004–2012.



**Fig. 4.** Increase of price level indices for food and increase of average hourly wages in 2010 compared to 2006.

price levels were reached in 2011 and 2012 (120.4 points in 2011 and 119.4 points in 2012). Except for the category of oils and fats, prices of all kinds of other basic foods were at a lower level than the EU-27 and EU-15 (European Union 15 countries) average levels (Fig. 3).

While food price trends were relatively

balanced in the Visegrad Four group (V4) (except for Poland, where price levels were lower), Austria had a significantly higher price level, which corresponded to its higher economic efficiency. Of the V4 countries, Slovakia had the highest price levels for all categories except for meat, for which the highest price levels were observed in the Czech Republic, and for fruits, vegetables and potatoes, for which the highest price levels were achieved in Poland (Tab. 4).

From the comparison of the pace dynamics of the price levels indices for food and average hourly wage median in Slovakia in the monitored period follows, that the increase of PLI in Slovakia had a slower growth trend than the average hourly wage. Different pace dynamics can be demonstrated on a comparison of these parameters in the two years for which data are available (average hourly wage median was reported by Eurostat only for 2006 and 2010). Price level indices for food increased in 2010 compared to 2006 by 20%, while the average hourly wage median increased by 56% during the period (Fig. 4). This is a positive factor in the development of income in Slovak households. In consequence of this phenomenon, purchasing power may increase and the ability of households to buy healthy, nutritionally balanced food from domestic production may increase.

From comparison of the PLI increase for food and from the increase of the average hourly wage median in the monitored years within the V4 countries and Austria follows that in Austria, different from V4 countries, the upward trend of PLI as well as of the hourly wage was slower, which demonstrates higher economic performance stability of the country. From V4 countries, the most dynamic increase in both parameters was observed in Slovakia.

In addition to funds, other factors that significantly influence the composition and food consumption are lifestyle habits with regard to nutri-

**Tab. 4.** Price level indices of V4 countries and Austria for selected food groups in 2012.

Types of products	Price level index						
	EU-27	EU-15	Slovakia	Czech Rep.	Hungary	Poland	Austria
Food	100	106.7	85.3	82.4	80.1	59.9	120.7
Bread and cereals	100	106.4	81.7	73.8	74.3	81.7	133.8
Meat	100	110.9	71.1	72.7	71.8	55.1	131.9
Milk, cheese, eggs	100	104.0	97.5	90.7	87.8	63.0	101.1
Oils and fats	100	101.9	119.4	103.0	101.4	73.6	120.6
Fruits, vegetables, potatoes	100	108.9	91.6	84.8	119.8	124.1	98.5

Source: Eurostat [17].

EU-27 – European Union 27 countries, EU-15 – European Union 15 countries.

tion, buying patterns, food-preparation practices in households, degree of out-of-home consumption, willingness to pay for food and, in the last years, the awareness and responsibility about food, as well as knowledge and competencies of consumers.

#### The relationship between food security and agricultural land

Making food production and consumption more sustainable is a highly complex matter. On a global scale, with 800 million people starving, food security is the key issue. In Slovakia, where food is more abundant than ever before and its variety is enormous at relatively low prices (compared to the EU-27 average), consumers do not realize that food security can be a problem in the future. At the same time, consumers evince increasing unease about the ecological integrity of food. Pesticides in drinking water and wine, hormones and antibiotics in meat, pathogenic bacteria and nicotine in eggs, and preservatives and additives in food head the list of consumer concerns. However, from the researchers' point of view, the issue of food security has become crucial.

According to preliminary RIAFE calculations [13], in terms of food self-sufficiency of the population of Slovakia, 10485 km<sup>2</sup> of arable land and 3410 km<sup>2</sup> of permanent grassland are needed to cover food security. In Slovakia, primary agricultural land occupies 13895 km<sup>2</sup>, representing about 66% of agricultural soil currently registered in LPIS (Tab. 5). The advantage of Slovakia is the existence of so-called secondary agricultural land. This land can be temporarily used for purposes other than food production, without depreciation of the quality of the land (nature and properties remain practically unchanged). This land can be allocated to alternative agricultural use, bioenergy production, afforestation, sports, tourist or recreational purposes. From a methodological point of view, it is the soil, as registered in LPIS. In terms of integration into typological production categories of agricultural land, it can be categorized as less productive fields and production grassland (OT2, OT3), potential grassland (T1, T2, T3) or unsuitable areas for agroecosystems (N). It is a land where ESQU point values is in the range from 1 to 55 points, and the average ESQU point is 29.43 points. In Slovakia, secondary agricultural land occupies 7070 km<sup>2</sup>, representing about 34% of agricultural soil currently registered in LPIS. In the secondary agricultural land, there is a reserve of land, where the conditions for crop growing are favourable, representing 531 km<sup>2</sup> (Tab. 6).

Respecting the principles of the present struc-

**Tab. 5.** Primary land use pattern in the Slovakia.

Crops	Output [kt]	Assumption yields [t·km <sup>-2</sup> ]	Required area [km <sup>2</sup> ]
Cereals	2600	500	5200
Sugar beet	1300	4700	280
Oilseeds	467	260	1800
Potatoes	414	1580	200
Legumes (edible)	15	200	70
Legumes (feeding)	17	200	85
Forage	3828	1500	2250
Vegetables			300
Arable land, total			10485
Perennial crops			3410

Source: RIAFE [13].

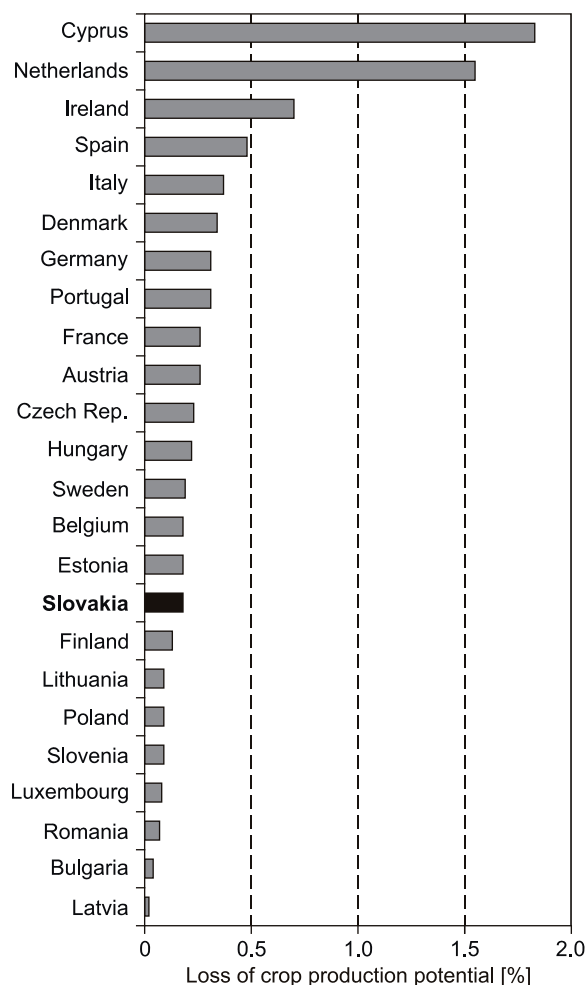
ture of sowing of agricultural crops, as well as productive potential of the reserve land, reserve for the production of individual crop commodities was also established. This involves other agricultural land, which is the land that should be used preferably for alternative agricultural use, growing energy crops and for various non-biological purposes, such as sports, hiking, recreation and artificial areas. From the methodological point of view, this is the soil, which is not registered in LPIS but belongs to agricultural land. Other agricultural land occupies 3691 km<sup>2</sup>, which represents about 15% of currently registered agricultural soils of Slovakia.

According to the European Commission report [15], based on the assessment of 24 member states, EU lost 0.3% of its crop production potential between 2000 and 2006. The loss of agricultural production capacity followed different patterns

**Tab. 6.** Secondary land use pattern in the Slovakia.

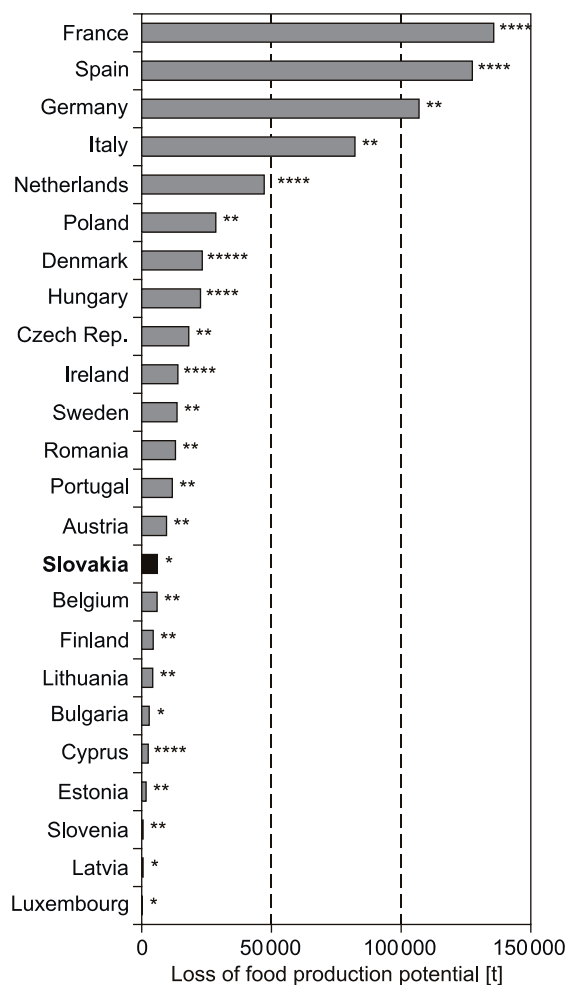
Crops	Output [kt]	Assumption yields [t·km <sup>-2</sup> ]	Required area [km <sup>2</sup> ]
Cereals	103	380	271
Sugar beet	51	3500	15
Oilseeds	19	200	94
Potatoes	14	1300	10
Legumes	2	150	8
Forage	152	1300	117
Vegetables			16
Total			531

Source: RIAFE [13].



**Fig. 5.** Loss of crop production potential due to land grabbing in European Union between 2000 and 2006.

among its member states, depending both on the quantity and the quality of agricultural land converted to artificial areas. As seen in Fig. 5, the proportional productivity loss of the cropland potential was the highest in the Netherlands (1.6%) followed by Cyprus (0.8%), Ireland (0.8%) and Spain (0.5%). In particular the Netherlands lost its basis for crop production at an exceptionally high speed. Taking into account the high population density and the cropland resources productivity in the Netherlands, the security of local food supply accounted for the greatest loss in this country. The average loss of 0.3% of croplands and 0.3% of crop production potential in the investigated 24 member states between 2000 and 2006 might be compensated by technological advance-



**Fig. 6.** Total national losses of cropland productivity potential in EU countries (2000–2006).

Loss of food production potential is expressed in tonnes of wheat yield equivalents.

Loss of food production potential per year and citizen: \*\*\*\*\* – > 4 kg, \*\*\*\* – > 3 kg, \*\*\* – > 2 kg, \*\* – > 1 kg, \* – < 0.5 kg.

ment, which result in a yield increase. However, considering the environmental consequences of the increased input intensity, the indicated loss is quite alarming from both the point of view of sustainability of land use, and also from the point of view of food supply of the continent and the globe.

To illustrate the magnitude of the problem, the land quality reserves lost between 2000 and 2006 were also expressed in wheat equivalents by member states (Fig. 6). Denmark experienced the largest loss of food production capacity, with more than 4 kg per year and citizen in the study period, expressed in wheat volume. Ireland and Cyprus were the next with above 3 kg per year and citizen, followed by Spain, the Netherlands, Hungary and France with more than 2 kg per year and citi-



zen loss of productivity potential in wheat equivalents. From the perspective of the remaining cropland resources, the most severe situation is in the Netherlands, due to the low level of per capita cropland resources. Further 9 member states have a per capita loss of production potential equivalent to more than 1 kg wheat production in each year during the study period. This figure is lower than 0.5 kg per only for Bulgaria, Latvia, Luxembourg and Slovakia. The sum of the annual losses of crop productivity due to conversion of croplands to artificial land was, in the 24 studied countries, as high as 659 000 t wheat equivalent. This figure is estimated to reach as much as 700 000 t for the whole of EU-27 countries.

## CONCLUSION

Food consumption analysis in Slovakia indicates that dietary habits of Slovak population do not correspond to a healthy lifestyle. From a nutritional point of view, the diet of the Slovak population is unbalanced. The price level in Slovakia was 85% of the EU-27 average in 2012, in the sector of food and non-alcoholic beverages. Compared to other EU countries, the price levels were low. However, the prices were high with regard to the income of the population in Slovakia. Slovak households spent on average 28% of the total consumer expenditures on the purchase of food and non-alcoholic beverages in 2012. The share varied among individual social groups and the increasing prices of food mostly affected the low-income groups of population. In Slovakia, primary agricultural land occupied 13 895 km<sup>2</sup>, representing about 66% of agricultural soil. In terms of self-sufficiency, the situation appears to be satisfactory. However, land grabbing for non-agricultural use intensified in recent years, which can endanger the food security in Slovakia.

## REFERENCES

- Godfray, H. C. J. – Crute, I. R. – Haddad, L. – Lawrence, D. – Muir, J. F. – Nisbett, N. – Pretty, J. – Robinson, S. – Toulmin, C. – Whiteley, R.: The future of the global food system. *Philosophical Transactions of the Royal Society B*, 365, 2010, pp. 2769–2777. DOI: 10.1098/rstb.2010.0180.
- Reisch, L. – Eberle, U. – Lorek, S.: Sustainable food consumption: an overview of contemporary issues and policies. *Sustainability: Science, Practice, and Policy*, 9, 2013, Issue 2, pp. 7–25. <<http://sspp-project.com/archives/vol9iss2/1207-033.reisch.html>>
- Freibauer, A. – Mathijs, E. – Brunori, G. – Damianova, Z. – Faroult, E. – Gomis, J. G. – O'Brien, L. – Treyer, S.: Sustainable food consumption and production in a resource-constrained world. Brussels : European Commission – Standing Committee on Agricultural Research, 2011. <[http://ec.europa.eu/research/agriculture/scar/pdf/scar\\_feg3\\_final\\_report\\_01\\_02\\_2011.pdf](http://ec.europa.eu/research/agriculture/scar/pdf/scar_feg3_final_report_01_02_2011.pdf)>
- Kearney, J.: Food consumption trends and drivers. *Philosophical Transactions of the Royal Society B*, 365, 2010, pp. 2793–2807. DOI: 10.1098/rstb.2010.0149.
- Andreyeva, T. – Long, M. W. – Brownell, K. D.: The impact of food prices on consumption: A systematic review of research on the price elasticity of demand for food. *American Journal of Public Health*, 100, 2010, pp. 216–222. DOI: 10.2105/AJPH.2008.151415.
- Sustainable food security under land, water and energy stresses In: 2012 Global Hunger Index The challenge of hunger: Ensuring sustainable food security under land, water and energy stresses. Washington : International Food Policy Research Institute, 2012, pp. 23–33. <<http://www.ifpri.org/sites/default/files/publications/ghi12.pdf>>
- Powell, L. M. – Chriqui, J. F. – Khan, T. – Wada, R. – Chaloupka, F. J.: Assessing the potential effectiveness of food and beverage taxes and subsidies for improving public health: a systematic review of prices, demand and body weight outcomes. *Obesity Reviews*, 14, 2013 pp. 110–128. DOI: 10.1111/obr.12002.
- Buday, Š. – Grausová, G. – Rybár, V.: Rozvoj trhu s pôdou a trhu nájomu v podmienkach EÚ. Bratislava : Výskumný ústav ekonomiky poľnohospodárstva a potravinárstva, 2013. ISBN 978-80-8058-586-0.
- Jamborová, M.: Obilniny. Situačná a výhľadová správa. Bratislava : Výskumný ústav ekonomiky poľnohospodárstva a potravinárstva, 2013, ISSN 1338-483X. <<http://www.vuepp.sk/dokumenty/komodity/2013/obilie2.pdf>>
- Spotreba potravín v SR. Bratislava : Štatistický úrad Slovenskej republiky: 2013. ISBN 978-80-8121-231-4. <<http://slovak.statistics.sk/PortalTraffic/fileServlet?Dokument=c3ef34b7-fc3f-47a4-aa3d-a7525bc20325>>
- Príjmy, výdavky a spotreba súkromných domácností SR. Bratislava : Štatistický úrad Slovenskej republiky: 2013. ISBN 978-80-8121-239-0. <<http://slovak.statistics.sk/PortalTraffic/fileServlet?Dokument=bcd987e0-c571-4424-9dce-de74a901dcd>>
- Buday, Š. – Vilček, J.: Kategorizácia a hodnotenie poľnohospodárskych pozemkov na Slovensku. 1. vyd. Brno : Mendelova univerzita, 2013. ISBN 978-80-7375-789-2.
- Vilček, J.: Potenciály a parametre kvality poľnohospodárskych pôd Slovenska. *Geografický časopis*, 63, 2013, pp. 133–154. ISSN 1335-1257. <<https://www.sav.sk/journals/uploads/02201322GC-11-2-Vilcek.pdf>>
- Krížová, S.: Spotreba potravín vo vzťahu k príjmom a výdavkom domácností SR. *Ekonomika poľnohospodárstva*, 7, 2007, No. 4, pp. 44–51.

15. Tóth, G. – Li, X. (Ed.): Threats to the soil resource base of food security in China and Europe. A report from the Sino-EU Panel on Land and Soil. Luxembourg : Publications Office of the European Union, 2013. ISBN 978-92-79-27745-0. DOI: 10.2788/71196.
16. Správa o poľnohospodárstve a potravinárstve v Slovenskej republike za rok 2012. Bratislava : Výskumný ústav ekonomiky poľnohospodárstva a potravinárstva, 2013. ISBN 978-80-8058-592-1. <<http://www.vuepp.sk/dokumenty/zelena/zele-na2013.pdf>>
17. Purchasing power parities (PPPs), price level indices and real expenditures for ESA95 aggregates. In: European Commission Eurostat [online]. Luxembourg : Eurostat, last update 16 January 2014 [cited 4 April 2014]. <[http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc\\_ppp\\_ind&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_ppp_ind&lang=en)>
18. Rural Development in the EU – Statistical and economic information report 2012. Brussels : European Commission, 2012. <[http://ec.europa.eu/agriculture/statistics/rural-development/2012/full-text\\_en.pdf](http://ec.europa.eu/agriculture/statistics/rural-development/2012/full-text_en.pdf)>

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