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# Consumption of Foodstuff as a Better Indicator of the Responsible Sustainability: Case Study about Slovakia

*Renata Benda Prokeinova*
*(Slovak University of Agriculture, 94976 Nitra, Slovakia)*

**Abstract:** The debate on sustainable consumption has highlighted a variety of tensions between the pursuit of wellbeing and the need to remain within ecological limits. The aim of the paper is to analyze a situation in Slovakia and make the highlights of the aspect's consumer decisions. We would like to initiate that the sustainability of the country is much easier to quantify by using the data about consumption than counting footprints or other indicators focusing on different aspects of sustainability. The Consumption of the households is a better indicator for identifying sustainability and environmental performance. From the viewpoint of the economic situation in Slovakia it could be very simply said that the population tends to sustainable consumption if expenses on the goods and services have kept growing. The Analysis shows that the increase in prices for food and other items of daily life affect the population with a lower income level. They buy less food products and from the economic viewpoint of the sustainability it seems like a positive effect, or not? The aim of the paper is to analyze consumption of the foodstuff in Slovakia and make the highlights of the aspect's consumer decisions (Behavioural economics).

**Key words:** consumption; expenditure; sustainability
**JEL codes:** A11, E21, Q10, D11

## 1. Introduction

Designing sustainability policies requires a theory of consumer behaviour which would realistically deal with how individuals respond to the novelty (Nelson & Consoli, 2010), how habits and practices emerge and constitute a "normal way" of life (Shove, 2004), and account for the evolution of wants and socially-constructed desires (Witt, 2011). So far, the policy analysis has been dominated by neoclassical economic thinking, which ignores these aspects of consumer behavior. There are the concerns that neoclassical economics is inadequate to guide policy prescriptions in the presence of evolving preferences, complex socio-economic interactions and deep uncertainty (e.g., Akerlof & Shiller, 2009; Farmer & Foley, 2009; Gowdy, 2004, 2005; Ostrom, 2008; van den Bergh & Kallis, 2009). It focuses on exogenous preferences and static equilibrium outcomes, and thus ignores a preference change and possible long-term effects of implemented policies.

Evolutionary economics offers a good starting point to think about developing an alternative approach for the analysis of policies for sustainable consumption. This is because the evolutionary economics provides a more

Renata Benda Prokeinova, Ing. Ph.D., Slovak University of Agriculture in Nitra; research areas/interests: consumption of foodstuff, sustainability. E-mail: renata.prokeinova@uniag.sk.

realistic account of individual behavior, social interactions, evolving preferences and habit formation than neoclassical economics (Hodgson, 1988).

Sustainable consumption is based on a decision-making process that takes the consumer's social responsibility (cfr. Homo Politicus who tries to consider what is best for society, Faber et al., 2002) into account in addition to individual needs like taste, price, convenience and health. Several studies concentrated on attitudes towards sustainability and sustainable consumption behaviour (Shrum et al., 1995; Verbeke & Viaene, 1999; De Pelsmacker et al., 2003). The best documented case is probably the one of organic foods, with consumer attitude towards organic products being in general more favourable as compared to conventional food products, both among organic and non-organic consumers.

The debate on sustainable consumption has highlighted a variety of tensions between the pursuit of wellbeing and the need to remain within ecological limits (Reisch & Røpke, 2004; Defra, 2005; EEA, 2005; Jackson, 2006 and NCC/SDC, 2006).

The idea of sustainable consumption is: the possibility that we might "live better by consuming less" (Jackson, 2005, 2008). This hypothesis has informed both conceptual and empirical responses to consumerism over several decades and underpins popular movements for voluntary simplicity and downshifting to this day (Etzioni, 1998; Hamilton, 2003; Hamilton & Mail, 2003; and Schor, 1998). The underlying suggestion is that less resource intensive lives might in fact be equally or perhaps even more fulfilling in psychological or social terms (Kasser, 2002). Yet this hypothesis raises a number of fundamental questions.

People in rich countries have consumption patterns that require more land, water, and fuel-fresh tropical fruit all year round, exotic coffee, large quantities of meat and fish. It is also frequently eating at restaurants serving over-large portions and there is more food wastage. The residents of rich countries have already added the growing middle class emerging countries such as China and India. In China, for example, rose from the 1985 annual meat consumption per capita of 150% (A New Era of World Hunger? FES Briefing Paper, 2008).

What is the main reason for less level of consumption? Is really our consumption unsustainable?

The aim of the paper is to analyze consumption of the foodstuff in Slovakia and make the highlights of the aspect's consumer decisions. We would like to show, that if people have lower income level, they consume less amount foodstuff. If they consume less foodstuff, so we don't need produce huge agriculture production.

## 2. Research Results and Discussion

Not only is the amount of our income, but also the ability to raise them for various goods and services a reflection of the standard of living in every economy. The smaller proportion of our spending goes to necessary goods, the more finance we remain on luxury goods. We have to eat and therefore food expenditure is classified as essential. The menu, however, each one of us can be different and it just depending on what our wallet allows. A Slovak citizen in 2012 spent on food and soft drinks on average 865.2 Euros. We have eaten more than over drunk, because each consumer spent on the food 780.5 Euro per year Food and non-alcoholic beverages and soft drinks annually are eroding us to almost 25% of the total consumption expenditure.

Consumption is a major concept in economics and is also studied by many other social sciences. Economists are particularly interested in the relationship between consumption and income, and therefore in economics the consumption a function plays a major role (Paluchova, 2010).

Consumer spending, according to the Statistical Office of the Slovak Republic, divided into basic departments:

**Food and soft drinks** are all the costs associated with the purchase of food and non-alcoholic beverages in the business network.

**Alcoholic beverages and tobacco expenditures** are on alcoholic beverages, tobacco and tobacco products.

**Clothing and footwear** are buying textile goods, footwear and textile haberdashery (hard haberdashery included expenses for personal items), including their construction and repair.

Housing, water, electricity, gas and other fuels include expenditures for gross rent flats in general, payments for the use of cooperative apartment, expenditures for purchases of goods and services for the construction and maintenance of housing, payments for electricity, gas, hot water and heat, buy fuel, water, sewerage and other expenses for services related to housing.

**Furnishings, household equipment** and routine household maintenance expenses include the purchase of furniture, furnishings and accessories, floor coverings, household textiles and tableware, household utensils and cutlery, household investment nature, various kitchen utensils and equipment, costs for producing those goods and their repair, including expenses for marketing, gardening, craft equipment, goods and services for cleaning and cleaning, and more.

**Health expenditure** is those for pharmaceutical preparations and products, medical goods, for services provided by medical staff in hospitals and beyond, including those of different therapists.

Set up **transportation expenses** for purchase of transport equipment, fuels and lubricants, costs associated with their operation and maintenance services, including driving schools, expenditure on transport services (trains, buses, airplanes, boats). Connections include expenses for postal services, the purchase of telephone and fax machines and telephone and fax services.

**Education** consists of expenditures for pre-school, primary, secondary, higher and other education, including different courses. Under hotels, cafes and restaurants are included in the cost of public catering (including a school canteen) and accommodation expenses for services (non-recreational).

**Miscellaneous goods and services** are expenditures on goods and services for personal care (including durum haberdashery), expenditures for social care, insurance of persons and things, and spending for other goods and services related to household consumption. “Insurance of persons and goods” includes motor insurance, home insurance, and apartment and so on.

Thus, we focused on the basic structure of expenditures of the Slovak population for the period 1998-2012. Time series are reduced compared to the analysis. The reason was the limited availability of data in the database of the Statistical Office.

If we look at the housing costs in 1998 was accounted for only 13.23% of total household expenditure. In 2012, that’s 22.71% for the same house or flat. In terms of rational behaviour should therefore focus on consumers’ essential costs as expenses for meals and housing. From the graph we see that non-essential expenses such as clothing and footwear and rest activities in the period fell. For a given situation the price of goods, services, fuel prices and energy can increase.

An interesting finding is that decreased expenses as a percentage of the food and soft drinks drops, while in absolute terms the expenditure for food and soft drinks systematically grows. For this psychological moment we focused on in a subsequent behavioural analysis. Examining of the irrational behaviour of consumers from the viewpoint of the various economic impacts, it is dealing with behavioural economics. The pioneers of behavioural

economics were two psychologists Amos Tversky and Daniel Kahneman. They found that when people face insecurity, usually do not act rationally, but not completely at random, rather behave in certain predictable ways. We argue that people are predictably irrational (Conway, 2009).

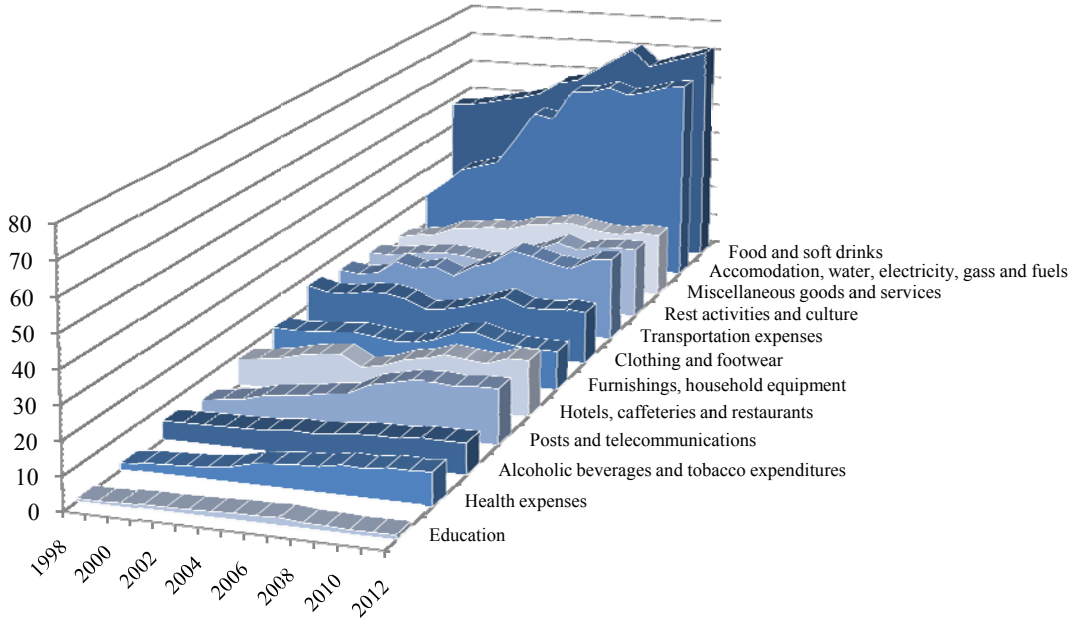



**Figure 1 Total Expenses since 1998-2012 in Euro per Month and per Person**

Source: Slovstat, available online at: www.statistics.sk

A Standard neoclassical economic analysis assumes that humans are rational and behave in a way to maximize their individual self-interest. While this "rational man" assumption yields a powerful tool for analysis, it has many shortfalls that can lead to unrealistic economic analysis and policy-making.

In terms of sustainability theory, we could conclude that it is a positive phenomenon. Furthermore, we can conclude that if we consume less food, farmers do not have so much pressure on agricultural production through the use of fertilizers and pesticides.

Historical data seem to indicate that in 1990 the surplus food given to the population of 5 306 539. In 2012, no consumption of foods has decreased; while the population has increased slightly to 5 398 384.

One can question what is to ascertain the state of consumption. We assume that all residents are environmentally conscious and do not follow their food consumption. Thus, we focused on the basic structure of expenditures of the Slovak population for the period 1998-2012. Time series is reduced compared to the analysis. The reason was the limited availability of data in the database of the Statistical Office.

The basic structure consists of expenses: Food and non-alcoholic beverages, Alcoholic beverages, tobacco and Narcotics, Clothing and footwear, Housing, water, electricity, gas and other fuels, Furnishings, household equipment and routine maintenance of the house, Health, Transport, Communications, culture and Recreation, Education, Restaurants and hotels, Miscellaneous goods and services.

Residents of Slovakia are sensitive to prices and costs especially for food and housing, which are essential to life. In more detail, we focused on the comparison between 1998 and 2012. We conclude an increased spending in almost all areas, thanks to it's in the pie charts.

The chart shows the structure of expenditure per person per month, according to the purpose of the household. An Internal chart presents the situation in 1998 and the outer graph shows the situation in 2012. It is a comparative graph that points to the fact that expenditure in nominal value grows as evidenced by the following chart XX, as well as for ex it in relative terms, the share in the structure of expenditures in 2012 decreased compared to 1998. What is the reason for this situation? The answer has to be seen in prices. The constant increasing caused the situation, although that people buy because they have to, but buy of less.

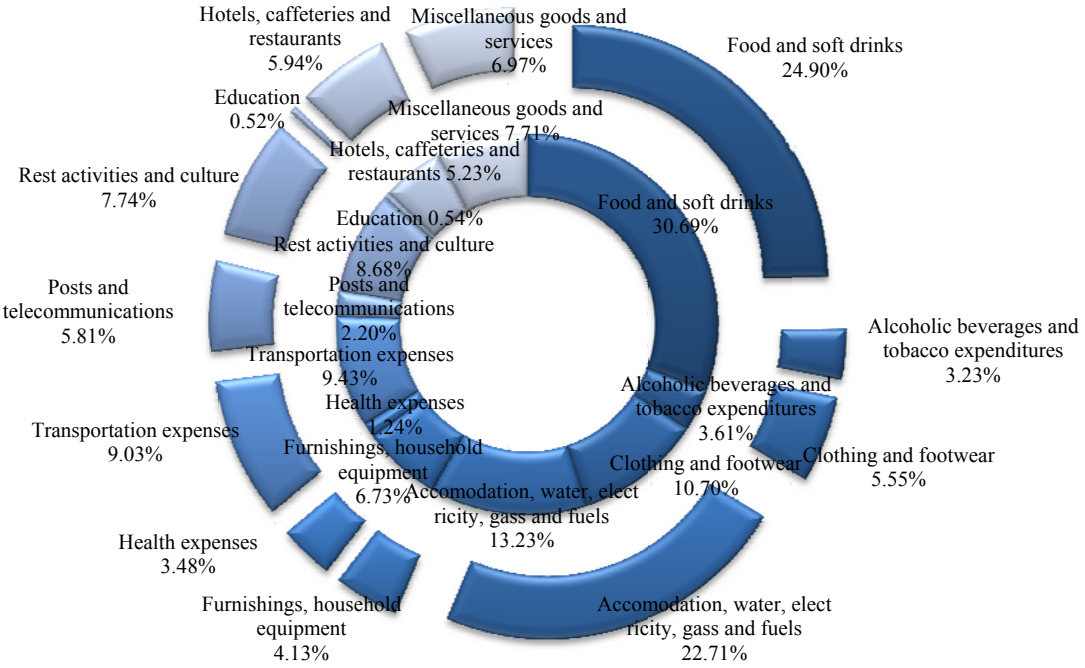



**Figure 2 Structure of Expenditure According to the Purpose of the Slovak Households in 1998 and 2012**

Source: Slovstat, available online at: www.statistics.sk

In the chart, we can follow the development of costs by usage. It is clear that increased spending in some areas is by more than 100%. In particular, the Food and non-alcoholic beverages and Housing, water, electricity, gas and other fuels. Household consumption also changes due to changes in prices.

We can see several long-term trends within the consumer behaviour. One of theorists, who had the first attempt to characterize the extensive empirical material, was the Prussian statistician Ernst Engel (1821-1896). Engel in his research concluded that if household income increases, the general tendency is to decline in the share of expenditure on food in total household expenditure (the Engel law).

Engel later expanded its investigation to include other groups of household expenditures (e.g., rent, clothing) and examined their development in relation to increasing household income. The current economic theory explores these questions in great detail by each consumer household items.

Keynes assumed the operation of the basic psychological law, that if an income increases as consumption increases absolutely, but its share of the income decreases. The situation in Slovakia does not correlate with either theory. The situation in Slovakia describes a condition that could be called a crisis. But it is not caused by the financial crisis of 2008, it is the social crisis caused by political decisions and economic transformation of the 90's. The effects of transformation of the Slovak economy are just beginning to follow.

The second possible variant of behaviour may be such that people buy more expensive products, which could be tuned to higher spending and smaller quantities of food. This behaviour cannot be generalized because almost 60% of people have less than the average salary in Slovakia. The amount of the average salary distorts few percent of people earning well. The question of the future is: What is the price actually sustainable consumption?

In this paper, we are focusing on the consumption of food, because foodstuff we consider as a major factor for the people and their sustainable behaviour and their behaviour affects sustainability of the country. Activities in agriculture directly affect the ecosystem of the country. How many people consume a certain extent, depends on how many farmers are unable to produce the crop and livestock production.

Wackernagel and Rees (1998) claimed in his publication Our Ecological Footprint: Reducing Human Impact on the Earth that the ecological footprint, that consumption has long been higher than the possibility of producing the planet. A footprint course comprises many indicators which are very difficult to be quantified such as emissions and $CO_2$. In many countries it is a huge problem to obtain the data about emissions or levels of $CO_2$. If we simplify the idea of an ecological footprint, we could really only focus on foodstuff and expenditure of households that are essential to survival.

In our articles we have repeatedly analyzed the ecological footprint of Slovakia. The result of the analysis was the fact that Slovakia is the most sustainable agricultural production. Then we are therefore interested in the consumption of the Slovak population. Analysis and comparison of the results are presented in this paper.

The Statistical Office provides an overview of basic foodstuffs that are observed in terms of consumption. As one single graph for the period 1990-2012 would be transparent, we have decided to present consumption of foods.

The contribution should highlight the behaviour of Slovaks when purchasing foods during the period 1998-2012. We would like to point out that people are not interested whether their buying behaviours affect their ecosystem country or other countries, they also do not care about the nutritional value of meals consumed. The most important factor for them is the price for the food, which is mainly due to low income.

The price is important, not what we consume. Slovaks have significant reserves in the right diet. The underestimation of the importance of certain food categories should not be missed in a healthy diet.

“The diet should dominate the priority of fair foods where ingredients have been substituted due to the reduction of their prices. Often have unrealistic demands of trade on the price of products on the ground to satisfy the requirements of consumers, forcing manufacturers to replace individual components”, said the president of Slovakia Food Chamber, Daniel Poturnay.

The main criterion when choosing the food we eat, according to the NCA would not be the price, but the health aspect. The Trend, unfortunately, shows and statistics confirm that Slovakia is a long low consumption of meat, potatoes, vegetables, fruits, legumes and their products. Lower power consumption compared with the recommended dose is perennial and the consumption of cereals.

The graphs show the consumption of an individual food items over the period examined from 1998 to 2012. The red line represents the recommended dose of food consumption in force since 2000, issued by the Ministry of Agriculture SR.

Perhaps none of the food except of meat expresses plastically the welfare prosperity or on the contrary, fluctuations in living standards, but also the changing views on the human consumption.

A distinct line of rational consumption of meat became in 1990. After this year the state stopped generously subsidizing not only the production of meat, but also its consumption. Only several economists remember that nowadays so expensive beef was that time available, because the State applied when sold negative sales tax.

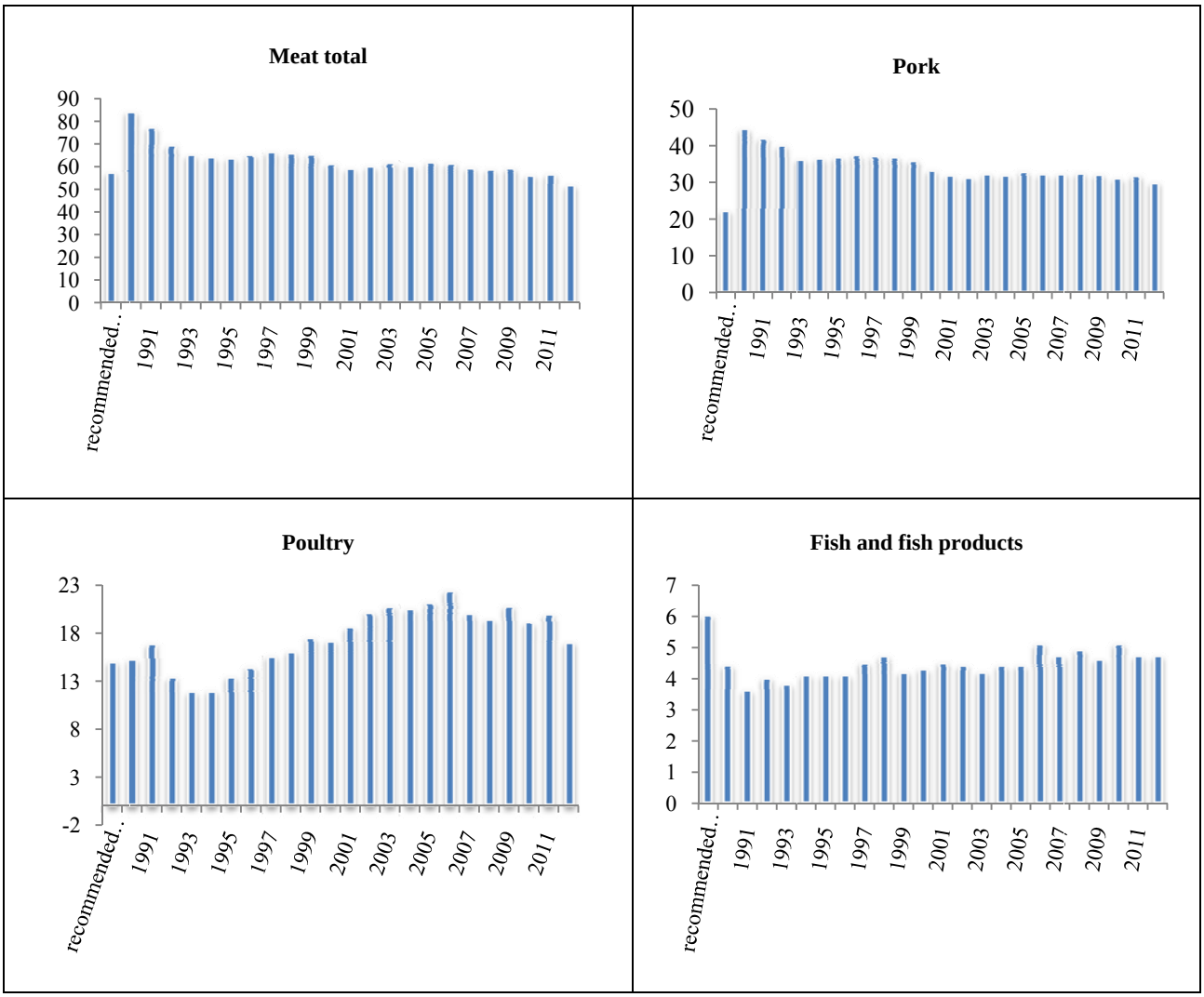



**Figure 3 Total Consumption of Meat and Fish Products in Slovakia 1990-2012 2012 and Comparison with the Recommended Daily Dose**

Source: www.statistics.sk, download: 21.1.2014

From the moment this worldly unusual measure stopped, the consumption went down sharply. But at the same time a variety of new knowledge emerged the importance and status of meat in the human diet has been reconsidered.

The question on why has the poultry consumption in recent years gone up sharply, especially at the expense of beef but also pork, is answered by the chief food section of Slovak Academic Science Ladislav Staruch. He points out the two- to five times' higher difference between the price of chicken, pork and beef.

The trend of Slovakia, who predicted a decade ago, Professor Ali Gurkan, director of food commodities and trade in FAO. "**Poultry meat is for poor people and beef for rich**" said Gurkan. In Slovakia, the annual consumption of beef per capita incredibly fell from 28 kg in 1990 to only 4.3 kilograms in 2010. In the same period, poultry increased from 13.6 to 19 kg. Over the past decade, the total consumption of meat on the bones translated per capita stopped at number 55.8 kilograms. "We have recommended range meat consumption, but the pattern of consumption of each type of meat is bad", says Ladislav Staruch. Critically low, according Staruch is a

consumption of beef and veal. An average citizen eats barely a quarter of the recommended dose of 17.4 kg per year. Slovakia is by 38 per cent with annual 30 kg per capita consumption of pork on the contrary over the recommended healthy eating.

Meat quality priority reflects the content of net muscle protein against higher in fat or water reduces the amount of meat. Staruch's definition is a good guide consumer in choosing meat. To the consumer, however, does not seek only for protein and other nutrients in meat dishes also expected pleasure, which is a mirror of sensory-sensory characteristics of food. If you have a positive experience with meat, you seek it again and again. The most important is still the price; it reflects not only the quality of providing benefit and enjoyment at the same time, but also the availability of meat. Consumer thus perceives meat, claims Ladislav Staruch.

Experts today are most concerned about low beef consumption, not only for protein content, as well as iron, B vitamins and zinc. Gourmets cannot commit to good beef; however for consumers with average incomes beef is expensive. Moreover, in the recent past, many people have been discouraged by the consumption due to a mad cow disease.

Within the meat consumption it should be pointed out that there is the wrong structure of each species of consumed meats. While consumption of beef and veal has been in a long-term decline in the past year 3.7 kg covered only 24.7% of the recommended dose, which is set at 17.4 kg and pork consumption was 31.7 kg and compared with the recommended dose of 22.2 kg it is up to 38.7% higher.

Although recent years have showed a slight increase in consumption of fish and fish products (5.1 kg), it is still not sufficient. Compared to 2009 it has increased by 0.5 kg, but compared with the recommended dose Slovaks are still below normal by about 1 kg. Doctors and experts have appealed on healthy nutrition, however, with no significant results. Fish consumption remains in Slovakia on the same level during decade. The supply of freshwater and marine fish and their products has increased significantly on the Slovak market in recent years.

A Slovak citizen eats on average 4.2 kilograms of fish per year, a quarter of which comes from fresh water. This is a lot below the recommended norm of 6.5 kg. Native fish farmers agree on the fact that Slovak cuisine is responsible for the consumption of fish. Consumption is influenced also by high prices, mainly of the high-quality fish. More complex food preparation also plays a role, compared for example with poultry.

Although experts consider milk as the richest source of calcium in the diet, their views on it are not uniform. Most doctors, however, state that the positives of milk prevail over the potential negatives. Milk also contains not only calcium but also vitamins and minerals.

According to the data from a survey conducted by GfK consumption by households, Slovakia has been stable over the last year. For comparison, in 2011 compared to 2010 the consumption of fresh milk decreased about six percent. While consumption of UHT milk was remained roughly the same level. Consumers certainly had an impact on food scandals in the media and the various myths and assumptions about drinking milk.

It is also possible to observe changes in purchasing behaviour of Slovaks. The intensity of purchases per household over the past year compared to the previous period decreased. On the other hand, the quantity of milk purchased per household increased. This means that people go shopping less often and make a bigger food supply.

The long-term trend is that consumers buy frequently Slovak life milk. This constitutes from 73 percent of the total volume of milk purchased, an increase over last year. The most popular type of milk Slovaks is durable semi-skimmed milk, semi-skimmed milk while with 81 percent of the volume of UHT milk. Consumers pay attention to the form of packaging, households prefers milk packaged in cartons. People are buying less fresh milk; milk packed in bags and PET bottles.

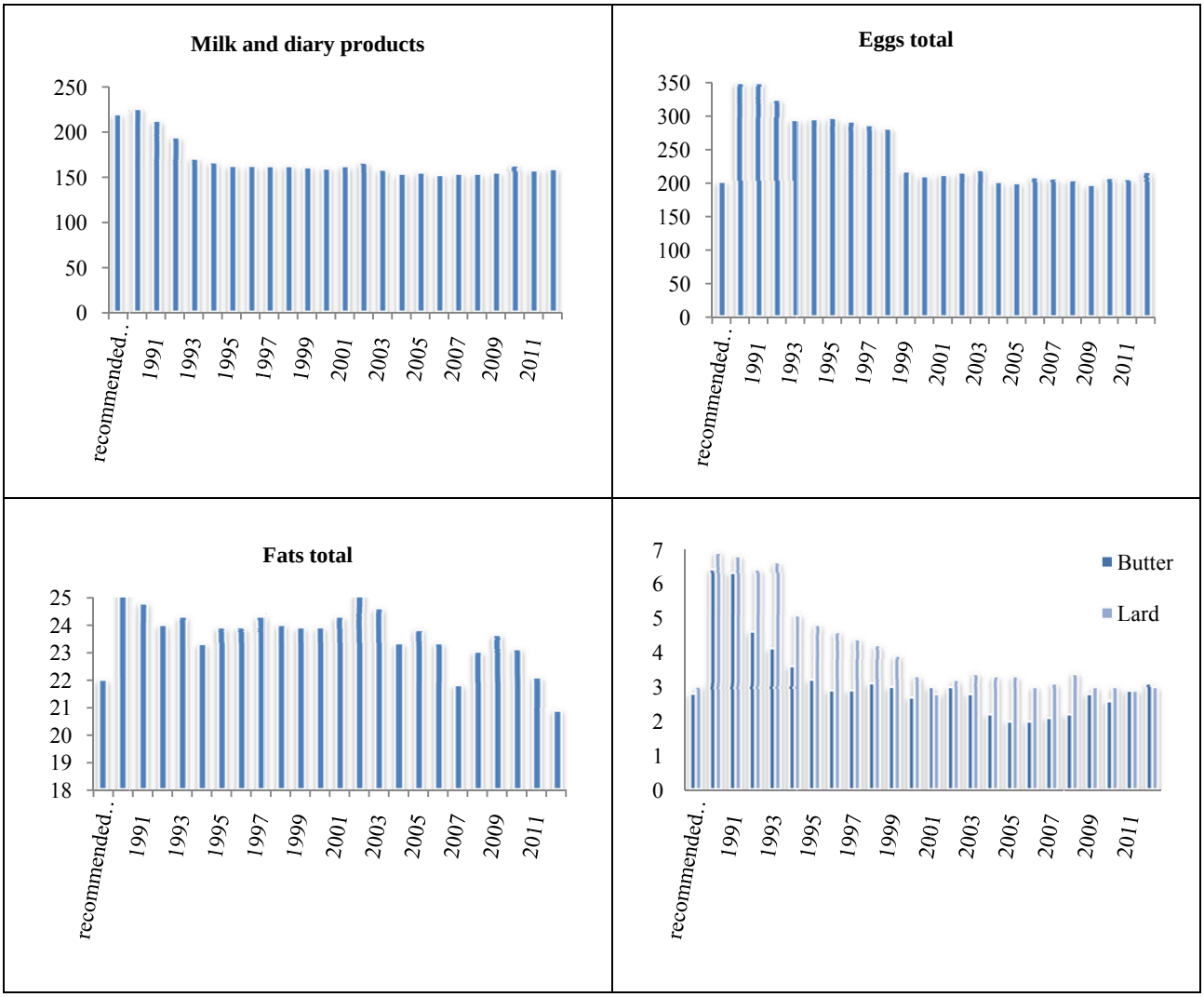



**Figure 4 Total Consumption of Milk and Dairy Products, Eggs and Fats in Slovakia 1990-2012 and Comparison with the Recommended Daily Dose**

Source: www.statistics.sk, download: 21.1.2014

Egg production does not rise at a pace that would result in a surplus of this commodity in Slovakia. However, certain surplus arises because egg consumption per capita in Slovakia decreased, from 220 units before 1989 to 185 units per capita in 200. As the main cause of this trend indicates that after 1990 was publicized information that eggs contain cholesterol and it is harmful. It was wrong. Later, the information about the significance of eggs for human body has been corrected. The public awareness about the fact that eggs which yolks contain proteins and trace elements deemed essential component of human nutrition. But ultimately we reconsider that egg production has been from 1992 one of the most stable items in food consumption.

One of the most important findings of the last century was that, the quality of dietary fats decides on the extent to which the organism is threatened by the lesions on the cardiovascular system. Decisive is the chemical structure of fatty acids, which is the main component of fat. Fats play an irreplaceable role in our diet, because they increase the absorption of fat-soluble vitamins.

Within Fats, the decline of the consumption can be seen. It is important to note that total fats include: butter, lard, vegetable fats and oils, and hydrogenated edible vegetable shortenings, cooking oils and other fats.

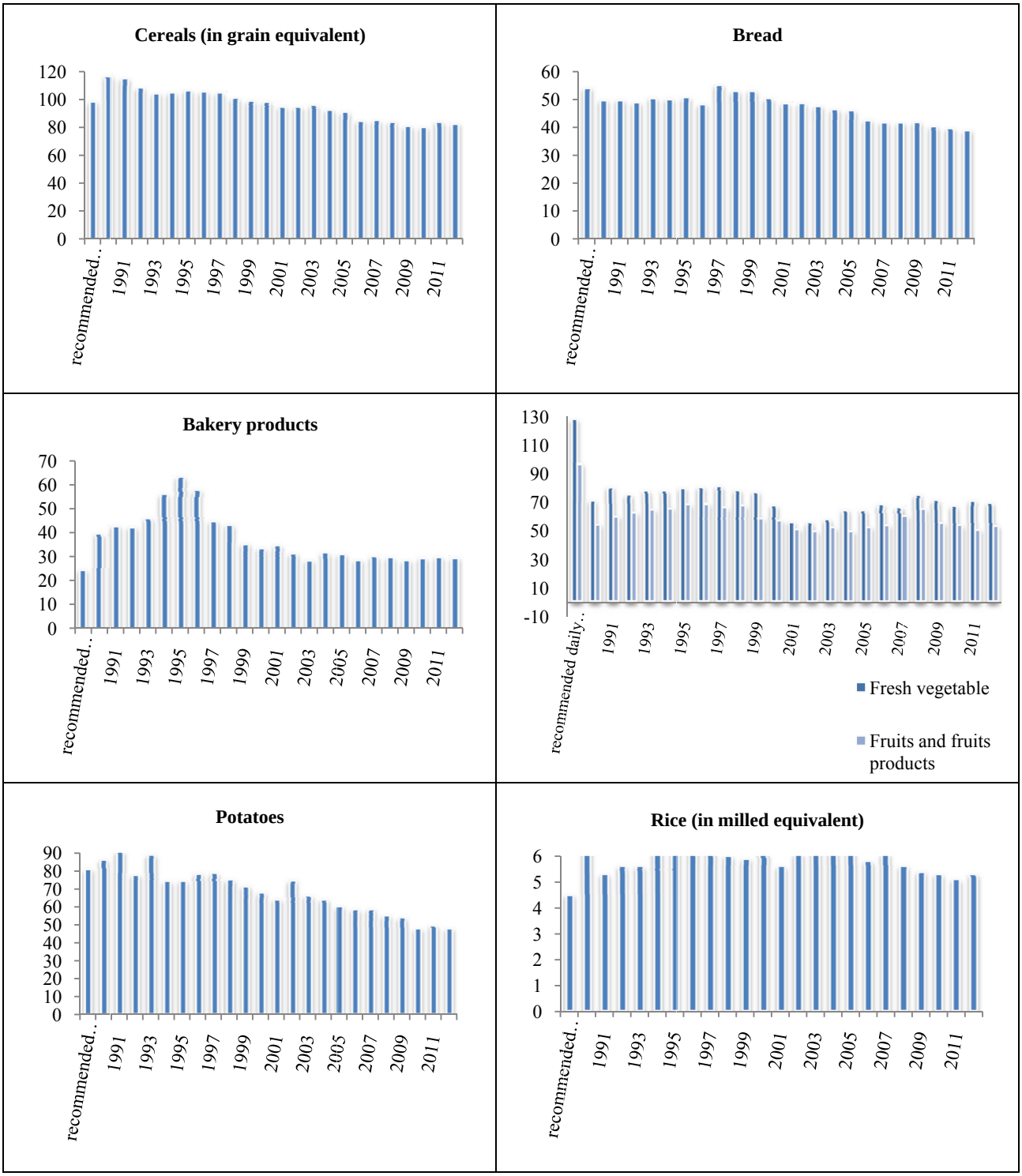



**Figure 5 Total Consumption of Cereals, Bread and Bakery Products, Fresh Vegetable and Fruit and Potatoes and Rice in Slovakia 1990-2012 and Comparison with the Recommended Daily Dose**

Source: www.statistics.sk, download: 21.1.2014

Slovakia continued long-term trend of high consumption of animal fat and protein, which has a direct impact on the increase in overweight.

Vice-versa, the Slovaks generally do not receive the recommended amount of carbohydrates and dietary fiber. As we can see in the detailed chart of consumption of butter and lard, it is a long-term downward trend in consumption of these vital fats.

Flowingly important food groups are cereals, where the consumption of bread and bakery products belongs. The last chart represents consumption of the fresh vegetable and fresh fruits.

Although the tradition and the dietary habits of the past play an important role in Slovak consumers' decisions in purchasing the food products for the past decade, the average annual per capita bread consumption has decreased. While in 1998, there was one person, on average, who consumed 52.8 kilograms of bread, in the following year it was 41.4 kg (almost 22% less). Almost nearly 31% decrease there was recorded in the 10-year comparison of consumption of wheat bread. During 1998, the average citizen of Slovakia consumed 43.2 kg of pastry, last year, just under 30 kg. 10 years ago, the consumption of bread, pastries and pasta per 107.8 kg (20.1 kg higher than in 2008). The main reason for the declining trends in consumption in the bread and other types of bakery products is increasing price. The Slovak citizens consume on average 53 kg and 28 kg of bread per person per year, which is about the same amount as in the developed countries of Europe. In recent years, the consumption of bread recorded a downward trend, while the consumption of bread increases. Daily, according to expert estimates 1,100 tons and 380 tons of produced bread. Yet for 1990, Slovakia it was 65 kg consumption of bread and bread 20 g per capita per year. This is clear from representatives of business associations of bakers, and confectioners. In the past, a high consumption of bread was clear, because its production was subsidized and 1 kg of bread was produced for 2.80 to 3.60 crowns (0.09 to 0.119 Euros). Today, 1 kg of bread is sold for 0.99 Euros and more, so its use is much more rational than in the past. In the past, 20 to 22 kinds of bread were produced; today this number cannot be estimated because each manufacturer has its own recipe. Estimates vary; professionals and various sources admit at least 60 to 100 kinds of bread. Bread of the Slovak selection is the most commonly produced, which consists of about 60 percent wheat and 40 percent of rye flour. Indeed, individual producers have different deviations from this limit and use a variety of complementary mixture of other types of flour. The best known breads include the so-called eruptive bread, which is composed of 50 percent wheat and 50 percent rye flour.

Vegetables are among the most demanding commodities in the crop production. Vegetables are an important commodity for the National Economy. The Share of gross production of vegetable crop production has been during recent years around 14%.

Vegetables grown in our country are competitive, with comparable and often better quality parameters in terms of nutritional value, palatability than imported vegetables. Competitiveness of losing our domestic production after the harvest, in the absence of adequate facilities for post-harvest treatment, especially for washing , drying, grading, market presentation, packaging, labelling, rapid transport under satisfactory conditions and storage.

The Total annual consumption of vegetables per 1 inhabitant reached a peak in 1991 (80.4 kg). Since 1999, there has been a considerable decline in consumption, which is caused by a low production due to exceptional drought each year. It is not expected any reversal of a significant increase in consumption.

Health professionals recommended the consumption of 127.9 kg in total and fresh vegetables of 90 kg per capita per year. An Admissible interval of rational consumption ranges from 116.9 to 138.9 kg.

Problems with vegetable in Slovakia have several reasons. The nature of the production is very diverse. Some commodities such as tomatoes for industrial processing, marketing and onions for storage, production of carrots and parsley for marketing and storage technology have higher productivity without the need for manual work, Produced from direct seeding and there equipment for operations from sowing treatment through forests to harvest and post-harvest treatment. The quality of such production is stable with modern machines. Producers are manufacturing and goods are competitive.

The vast majority of vegetable species is highly demanding for the technical and technological equipment (covered space, especially machinery, refrigerators, storage, technology for post-harvest treatment, packaging), followed by manual work since the establishment of the crop until harvest.

Growing vegetables nowadays are hindered by high prices of all inputs, especially fertilizers, pesticides, irrigation, energy, fuel. Is also a primary disadvantage of arising sale, where consumer prices of vegetables are disproportionately higher than sales prices of the farmer? A further change after the creation of the function in growing production and trading centres are assumed. Unnecessary parts of several buyers and purchasers, particularly those who cause overprices of vegetables, should be excluded from the retail chain.

While in 2008 every Slovak ate on average 65 kg, in 1998 we consumed up to 71 kg of fruit, but is still few.

The recommended dose for the individual is 96.7 kilograms per capita and admissible interval within which our consumption on average is 86.7 to 106.7 kilogram per year. The connection should be looked for in the state of agriculture, lifestyle and business relations. The area of orchards from 90 years decreased from 16,500 to 9,500 hectares. The fall of the growing interest fruiter is a massive invasion of cheap fruits from abroad. We grow mainly apples. Annually Slovakia produces about 40 thousand tons of apples and 5-6 thousand tons of fruit, Total production covers 40 percent of the market needs, the rest is imported from abroad. Especially for traders, dealers from abroad are interesting; therefore, the year-round contract is concluded. A businessman from Spain is able to deliver fruit throughout the year, and our producer not.

Potatoes are not in favour, even though they are cheap. For specialist's potatoes is an option to save people from starvation. Wealthy consumers do not mind.

The high prices of rice and wheat have led to the rediscovery of the potato as a product that could feed the growing world population. So to solve the problem of hunger, which is due to increase in food prices was more realistic.

Potatoes are compared to rice and wheat relatively inexpensive and due to the fact that the market for them is not in developed countries such regulated as other essential crops. Even falling prices have stopped a long-term decline in consumption of potatoes in Slovakia. The Consumption of the potatoes depends not only on price developments, but also from advertising and lifestyle. The Slovak decline in consumption of potatoes is not unique, on the contrary—it is a worldwide trend. They stand behind this change in eating habits. Consumption of pasta increases to the detriment of consumption of the potatoes.

The average consumption is with us from 60 to 65 kg per capita per year. In the past it was also 80 kg.

**2.1 Summary**

2.1.1 People Save Up Money When Buying Food Stuff

A wider group of citizens who put major emphasis on the food price is growing. Therefore decrease in the consumption of beef, dairy products and eggs. The Consumption of fruits and vegetables is far below the recommended daily recommendation. And at a time when the price of fruit and vegetables recorded significant price increases, it cannot be expected that the situation will change in the near term. Consumer's importance of

certain foods is yet underestimated. There may be included, for example, pulses.

2.1.2 Fruit and Vegetables

A Daily consumption of fruits and vegetables is still insufficient and on average are lower by about 25%, as recommended (vegetables—the recommended amount of 400 g per day and actual consumption of 300 g per day, fruit—200 g recommended daily consumption and 142 g per day).

2.1.3 Dairy Products

Despite the upward trend in the consumption of cheese and curd still very low (only about 30 grams a day). Unfavourable, the decline in milk consumption (140 g milk intake per day is low), as well as the consumption of legumes.

2.1.4 Fish and Fats

Consumption of fish despite the increase is not sufficient, it would be appropriate to increase it by 50%. Consumption of free fat (60 g daily), despite the decline from the previous period is still high.

2.1.5 Confectionery

Adverse is an increase in the consumption of sugar, sugar confectionery and chocolate and chocolate confectionery. Consumption of bread is wheat substituted consumption and Bakery, which together with the increased consumption of sugar and sweets showing an increased intake of carbohydrates in the diet.

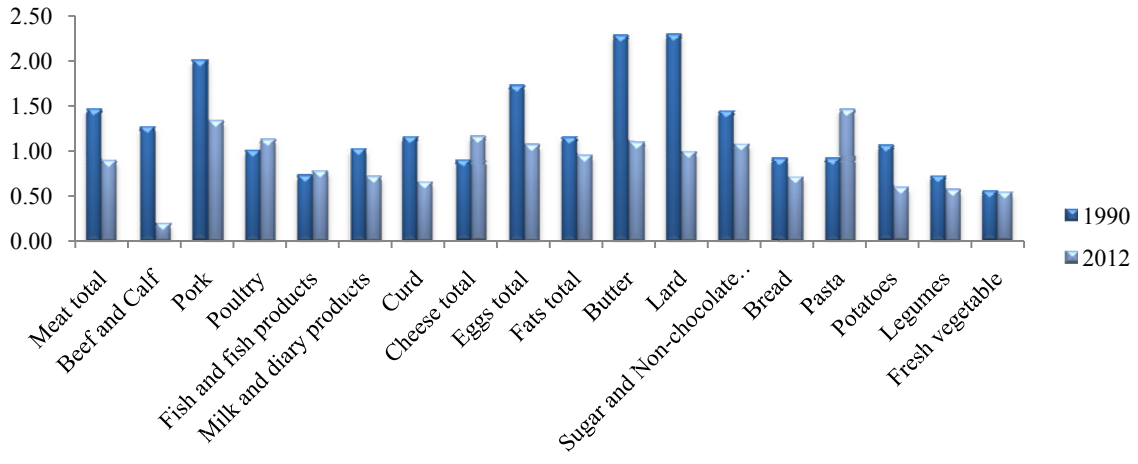
2.1.6 Pasta, Rice and Potatoes

Surprising is the decline in potato, which represent the traditional Slovak food and increased consumption of pasta. The total consumption of potatoes, rice and pasta is not normal.

2.1.7 Meat and Eggs

The standard is the consumption of meat, despite its decline, which represents about 150 grams a day. Nutritionally nutritious poultry meat are replacing cheaper. Consumption of eggs, about 4 pieces per week corresponds with the recommendations of a healthy diet.

After seeing all the graphs, we can say that the total annual per capita consumption of basic food is decreasing. Even the consumption of alcoholic beverages is declining and on the other hand increased the consumption of soft drinks.



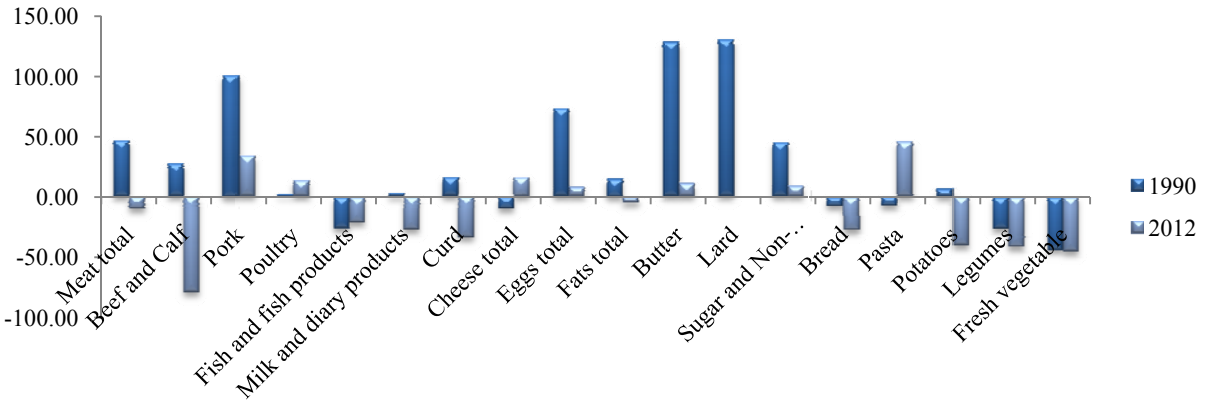



**Figure 6 Indexes Analysis of Food Stuff in 1990 and 2012 (base = recommended daily dose)**

Finally, we applied indexes analysis on the comparing consumption in 1990 and 2012 with the recommended daily dose. Substantial decreasing odds we can see in the Pork, Eggs, Butter and Lard and vice versa positive increasing odds is in the Poultry, Cheese and Pasta.

## 3. Discussion and Conclusions

Finally, we would like to state that the sustainability of the country could be easier to measure than a counting footprint or other indicators focusing on different aspects of sustainability. The consumption of the population is an indicator of more significant sustainability and environmental performance.

From the view of the economic situation in Slovakia, it could be very simply said that the population tends to the sustainable consumption as expenses are growing. The present analysis shows that the increase in prices for food and other items of daily life causes in low population income growth a positive effect on "sustainable consumption".

It is obvious that the present Slovaks are responsible for their consumption. From the viewpoint of sustainability it the sustainable consumption can be named. Although the food is to excess, Slovaks consume only as much as their wallet allows. The nutritional value of foods consumed less than the recommended dose, which can be seen as an important negative, the consequences of which we will see in the coming years in the population. A few paragraphs summarize the dietary habits of most of the population in Slovakia:

- Cheaper food stuff
- Don't care about history of product (country of origin, way of processing)
- First priority is price, second is quality
- In global view Slovak people eat less than before 20's years

One solution we can see in education of consumers about foodstuff. They have to track country of origin of the products and may prefer products from nearest countries, not from the other side of the globe. Concept of sustainable consumption should become for us the term as automatic and natural as drinking pure water.

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## Annexes 1

| Consumption of choosed kind of foodstuff for 1 person | ded daily | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Meat total** | **57,3** | 84 | 77,2 | 69,3 | 64,9 | 63,9 | 63,7 | 65 | 66,1 | 65,9 | 65 | 60,9 | 58,7 | 59,7 | 61,5 | 60,1 | 61,6 | 61,1 | 59 | 58,2 | 58,7 | 55,8 | 56,3 | 51,4 | kg |
| **Beef and Calf** | **17,4** | 22,1 | 16,6 | 14,6 | 15,6 | 14,3 | 12,2 | 12 | 12,2 | 11,8 | 10,4 | 9,3 | 7 | 6,8 | 6,9 | 6,4 | 6,2 | 5,3 | 5,4 | 5 | 4,4 | 4,3 | 3,8 | 3,5 | kg |
| **Pork** | **22,2** | 44,5 | 42,1 | 39,9 | 36,2 | 36,4 | 36,8 | 37,3 | 37,2 | 36,9 | 35,9 | 33,1 | 31,8 | 31,3 | 32,3 | 31,9 | 32,9 | 32,2 | 32,2 | 32,3 | 32 | 30,8 | 31,6 | 29,7 | kg |
| **Poultry** | **15** | 15,2 | 16,8 | 13,3 | 11,8 | 11,9 | 13,4 | 14,4 | 15,5 | 16 | 17,4 | 17,1 | 18,5 | 20,1 | 20,7 | 20,4 | 21,1 | 22,3 | 19,9 | 19,3 | 20,7 | 19 | 19,9 | 17 | kg |
| **Fish and fish products** | **6** | 4,4 | 3,6 | 4 | 3,8 | 4,1 | 4,1 | 4,1 | 4,5 | 4,7 | 4,2 | 4,3 | 4,5 | 4,4 | 4,2 | 4,4 | 4,4 | 5,1 | 4,7 | 4,9 | 4,6 | 5,1 | 4,7 | 4,7 | kg |
| **Milk and diary products** | **220** | 226,3 | 211,8 | 193,8 | 170,6 | 165,7 | 162,4 | 162,1 | 161,8 | 162,5 | 161,4 | 160,2 | 161,8 | 166,2 | 158,3 | 153,3 | 154,6 | 152,4 | 153,4 | 153 | 153,8 | 162,8 | 156,9 | 158,7 | kg |
| **Curd** | **3,2** | 3,7 | 3,2 | 3,5 | 3,7 | 2,5 | 2,4 | 2,1 | 2 | 2 | 2 | 2,2 | 2 | 2,1 | 2,1 | 1,9 | 2,2 | 2 | 2 | 1,9 | 2 | 2,1 | 2 | 2,1 | kg |
| **Cheese total** | **6,9** | 6,2 | 5,6 | 5 | 4,9 | 5,2 | 5,7 | 6 | 6,3 | 6,1 | 6,1 | 5,7 | 6,3 | 6,9 | 7,2 | 6,3 | 6,9 | 7,5 | 7,8 | 7,3 | 7,8 | 7,8 | 8,4 | 8 | kg |
| **Eggs total** | **201** | 348 | 348 | 323 | 293 | 295 | 296 | 291 | 285 | 281 | 217 | 210 | 212 | 214 | 219 | 200 | 199 | 207 | 205 | 204 | 197 | 208 | 205 | 216 | kusy |
| **Fats total** | **22** | 25,3 | 24,8 | 24 | 24,3 | 23,3 | 23,9 | 23,9 | 24,3 | 24 | 23,9 | 23,9 | 24,3 | 25,2 | 24,6 | 23,3 | 23,8 | 23,3 | 21,8 | 23 | 23,6 | 23,1 | 22,1 | 20,9 | kg |
| **Butter** | **2,8** | 6,4 | 6,3 | 4,6 | 4,1 | 3,6 | 3,2 | 2,9 | 2,9 | 3,1 | 3 | 2,7 | 3 | 3 | 2,8 | 2,2 | 2 | 2 | 2,1 | 2,2 | 2,8 | 2,6 | 2,9 | 3,1 | kg |
| **Lard** | **3** | 6,9 | 6,8 | 6,4 | 6,6 | 5,1 | 4,8 | 4,6 | 4,4 | 4,2 | 3,9 | 3,3 | 2,8 | 3,2 | 3,4 | 3,3 | 3,3 | 3 | 3,1 | 3,4 | 3 | 3 | 2,9 | 3 | kg |
| Vegetable edible fats and oils | **16,2** | 11,9 | 11,6 | 12,9 | 13,5 | 14,5 | 15,8 | 16,3 | 16,9 | 16,6 | 16,9 | 17,8 | 18,4 | 18,9 | 18,3 | 17,7 | 18,4 | 18,2 | 16,5 | 17,3 | 17,7 | 17,4 | 16,2 | 14,7 | kg |
| **Sugar and Non-chocolate confectionery** | **30,9** | 44,9 | 45,6 | 39,5 | 37,5 | 37,6 | 35,3 | 37,8 | 39,1 | 39 | 34,3 | 34,5 | 30,2 | 31,5 | 30,5 | 33,3 | 38 | 36,6 | 33,9 | 39,3 | 38,1 | 39,2 | 34,7 | 33,6 | kg |
| Cereals (in grain equivalent) | **98,5** | 116,5 | 114,9 | 108,5 | 104,3 | 104,9 | 106,5 | 105,7 | 104,8 | 101 | 99,2 | 98,5 | 95,1 | 94,8 | 95,9 | 92,8 | 91 | 84,8 | 85 | 84,2 | 81 | 80,3 | 84,2 | 82,7 | kg |
| Wheat (in grain equivalent) | **30** | 94,2 | 93,1 | 87,2 | 83,3 | 85 | 87,6 | 86,6 | 86,2 | 82,5 | 81,4 | 81,2 | 80 | 78,7 | 80,7 | 78 | 76,3 | 72,3 | 72,6 | 73,2 | 69,3 | 68,4 | 72,1 | 71,5 | kg |
| Rice (in milled equivalent) | **4,5** | 6,4 | 5,3 | 5,6 | 5,6 | 6,2 | 6,2 | 6,3 | 6,3 | 6 | 5,9 | 6,3 | 5,6 | 6,1 | 6,2 | 6,3 | 6,8 | 5,8 | 6,1 | 5,6 | 5,4 | 5,3 | 5,1 | 5,3 | kg |
| **Bread** | **54** | 49,7 | 49,7 | 48,8 | 50,4 | 50,1 | 50,5 | 48,1 | 55 | 52,8 | 53 | 50,2 | 48,6 | 48,4 | 47,5 | 46,4 | 45,8 | 42,5 | 41,7 | 41,5 | 41,6 | 40,1 | 39,4 | 38,7 | kg |
| Bakery products | **24,5** | 39,5 | 42,8 | 42,4 | 46 | 56 | 63,2 | 57,8 | 44,8 | 43,2 | 35,2 | 33,4 | 34,6 | 31,2 | 28,4 | 31,4 | 30,7 | 28,4 | 29,8 | 29,3 | 28,2 | 29,1 | 29,6 | 29,2 | kg |
| **Pasta** | **5** | 4,6 | 4,6 | 4,7 | 4,6 | 4,2 | 4,5 | 4,4 | 5 | 4,8 | 4,9 | 5,2 | 5,8 | 5,9 | 5,5 | 5 | 5,2 | 6,4 | 6,3 | 6,3 | 7 | 6,8 | 7,4 | 7,3 | kg |
| **Potatoes** | **80,6** | 85,8 | 90,8 | 77,7 | 89 | 74,2 | 74,3 | 78,4 | 78,6 | 75,2 | 71,7 | 68,1 | 64,3 | 74,8 | 66,3 | 64,2 | 60,3 | 58,6 | 58,7 | 55,1 | 53,8 | 47,6 | 49,5 | 47,9 | kg |
| **Legumes** | **2,6** | 1,9 | 2 | 1,8 | 1,9 | 1,9 | 2,1 | 1,9 | 1,9 | 2 | 2 | 1,9 | 1,9 | 1,9 | 1,6 | 1,6 | 1,6 | 1,6 | 1,6 | 1,6 | 1,5 | 1,6 | 1,6 | 1,5 | kg |
| **Fresh vegetable** | **127,9** | 70,8 | 80,4 | 75 | 77,8 | 77,8 | 79,5 | 80,3 | 80,7 | 78,1 | 76,8 | 67,2 | 56,2 | 55,8 | 58 | 64,7 | 64,6 | 68,7 | 66,4 | 75,1 | 71,3 | 67,1 | 71,2 | 69,2 | kg |
| Fruits and fruits products | **96,7** | 54 | 59,7 | 62,5 | 64,4 | 65,5 | 68,1 | 68,4 | 65,7 | 67,1 | 58,2 | 56,8 | 51,3 | 49,7 | 52,3 | 49,7 | 52,6 | 54 | 60,3 | 65 | 55,3 | 53,6 | 50,6 | 53,4 | kg |