

## Food and nutrition security – status and problems

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### Abstract

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The paper examines the problems in ensuring the food and nutrition security of Bulgaria. The focus is on the consumption. Outlined are characteristics by product groups and products. Highlighted are specifics, peculiarities and problems. Considered is the priority significance of the consumption of products with high biological value for the country's food and nutritional security. The significance and the role of their import in meeting basic food needs is assessed as unacceptable.

*Keywords:* food and nutrition security; food products; consumption; import; *Jel:* Q18

### Introduction

Substantial financial resources have been absorbed in the recent years in Bulgaria. There is also an increased attention to the problems related to the production of raw materials for the food industry and food products in the country, which are of key importance for increasing the volume of own resources, ensuring nourishing food consumption and increasing the level of food security in Bulgaria. However, no impressive results have been achieved.

The use of the opportunities for modernization through the entire food chain (from the production to the consumption) is accompanied by running processes, which results do not create stability in the food environment but affect negatively the availability and consumption of products corresponding to the nutritional needs of the population for an active and healthy living.

Usually, the focus is on main aspects of the food security related to the physical and economic access to food, the food supply sustainability, the production issues and the finding of optimal approaches to increase the food self-sufficiency, etc. Issues related to the food security remain somewhat aside and with a certain amount of schematicity in their examination – like the optimization of the eating pattern and

the product structure of the consumption, the interrelation between the biological value of the products and the health care, and others.

To some extent, this is explained with the different development stages of the understanding of food security. Until the 1980s, the attention is focused mainly on the food problems at global level. The concept of food security is used for the first time in 1974. In the 1980s, attention turns to the food security at both national and individual/personal level, using the nutrition energy indicator for this purpose. In the mid-1990s, the term nutrition security is introduced. In 1996, the Food and Agriculture Organization (FAO) officially defines also the concept of food security, which develops over the years (2009, 2013). Criteria are not only the quantitative indicators and the purchasing power, but also the biological value and safety of the products. Since the beginning of the 21<sup>st</sup> century, a new stage has begun, aiming to integrate the problems related to food and nutrition security. After 2010, attention is focused also on meeting the nutrition needs, i.e. a biological approach is introduced to the structure of consumption as the nutritional value of products for satisfying the nutrition needs. In 2014, World Health Organization (WHO) and FAO organize a joint Second International Conference on Nutrition (after the first one in 1992). After 2014,

along with the problems of hunger and malnutrition, questions related to the deficiency of nutritional microelements are raised. Thus the biological value of food products intake is directly related to the complete nutrition, i.e. with the nutrition security. In this sense, the Decade of Action on Nutrition (2016–2025) is announced by the UN General Assembly in 2016. One of the recommendations to the governments is a review of the national policies in the food sphere with an emphasis on increasing the potential and priority attention to products with high nutritional value, stimulating the production and consumption of products beneficial to health, i.e. for achieving food and nutrition security. In this context, the attention here is focused on the two marginal positions: the end one – consumption (healthy nutrition diet) and the initial one – production (sustainable production of food products and raw materials), since they, as part of the food system, have the greatest weight.

It should be noted that the development model of Bulgaria at the end of the 20<sup>th</sup> and the beginning of the 21<sup>st</sup> century have not provided an opportunity to ensure protection of the national production, necessary for its full participation in feeding the population in the country. The radical changes, including in agriculture, aiming at the “opening” and liberalization of the economy, are marked by the lack of adequate attention and a sensible assessment of the possible risks to the national food security, a consequence of the ongoing dynamic processes, including in the agrarian sector. In practice, in the food security system, discrepancies with the social needs, heterogeneous in nature and manifestation, are formed.

This is directly and significantly related to the presence of complexly intertwined problems concerning the country’s ability to meet the food needs, assessed according to criteria about:

- 1) rights equality of all citizens regarding the permanent availability of food products at the places of end consumption in volumes sufficient to meet the needs at scientifically reasoned and institutionally accepted levels of intake of nutrition substances and nutrition energy, and which volumes are fully in synchronization with the financial capabilities of the population for their acquisition;
- 2) conformity of the quality of the food products for sale (produced locally and imported). The quality should meet certain requirements for value in satisfying specific needs. Their harmlessness should not be imposed as accepted sufficient condition allowing consumption. This distorts the model of securing the population with food;
- 3) sufficiency of traditionally produced by the national

manufacturers vital food products, which in terms of structure and volume are the basis of the healthy diet of the population in the country;

- 4) stabilization and adequacy, from the society’s point of view, of the optimal conditions for ensuring the country’s food security. In the event of stopping the import of food products, these conditions would not lead to a crisis food situation, i.e. the relative food independence is guaranteed in terms of basic products for the healthy diet.

All this clearly outlines the importance not just of the presence and the access to sufficient quantities of food, but food of certain nutrition value, i.e. the nutrition security is a prerequisite for the food security. If food consumption does not improve health, it cannot contribute to the food security. Nutrition security and food security mutually reinforce each other and have a direct impact on health and quality of human life.

Preventing the scale of malnutrition and realizing the right to a healthy diet implies increasing the production and supply of safe and high-nutrition products and orienting the consumers to their consumption. The motivation of both producers and consumers is a consequence of caring for the ecological balance of the Earth and for human health (Branzova, 2017). The modern development of the world economy increasingly imposes the need to use more in number, more diverse and higher quality natural products (Branzova, Nestorov, 2023).

For a long time, a main goal of the food security policy has been to ensure the availability of products satisfying the nutrition energy intake. These are products, which to a small extent provide the needs for a sufficient quantity of macro- and microelements. This worsens the situation in the field of the nutrition and food security, provokes the spread of malnutrition and leads to the spread of nutrition-related social non-infectious diseases.

In a broader framework, it is important to note the possible risks for the country’s food and nutrition security, which are manifested as a consequence of the low-quality nutrition rations, the increased consumption of high-calory technologically processed foods with low biological value. In this case, the indicators are malnutrition, overweight, obesity and others, the presence of which compromises the food security of the country.

Illustration of this is the data for Bulgaria, presented in “The state of food security and nutrition in the world 2022”<sup>1</sup> by FAO. The data indicate that in the period 2019–2021 malnutrition (hunger) is widespread among 3% of the coun-

<sup>1</sup> <https://www.fao.org/documents/card/en/c/cc0639en>.

try's population; 2.9% and 15.5% respectively suffer from acute or moderate food shortages; overweight are 25% of the country's adult population (2016) and 5.7% of children under 5 years of age (2020). All indicators are higher than the average ones, both for Europe and for the Eastern European countries.

## Material and Methods

In the long run, the stability and security of the biologically determined human intake of energy and nutrients, based on parameters that satisfy one's physiological needs, are a function of the capabilities of all activities related to the production of a certain range of products with distinct characteristics. These characteristics are the basis for the regulation at national level of scientifically based physiological norms for the intake of proteins, fats, carbohydrates, vitamins, minerals and dietary fibers, which meet the needs of the population and ensure good health.

Formally, the main nutrition and biologically active substances are hardly found in pure form. They are in different combinations and concentrations in the food products. Their intake is possible when combining foods that ensure the maintenance of an optimal and relatively constant intake, which should not be underestimated at any time, due to its direct impact on the viability of the population.

The mechanisms for searching for good solutions, for achieving a stable model for satisfying the nutrition needs of the population and the implementation of the related policies, depend mainly on the possibilities of the national institutional capacity, such as volume, structure, assortment and quality.

It is important to note that this basic set is organized in nutrition groups based on information on the nutrition value of the different products, on one hand, and the degree of their participation as consumed nutrition energy in the total intake, on the other. This makes it possible to track the quantitative and qualitative characteristics of the food supply, the group and intra-group changes in the food intake, to determine the food needs of the population and, on this basis, to direct and concentrate measures for motivating and supporting the production of main products in the consumption structure.

The experience of most of the EU countries proves that without strong institutional intervention, the development of optimal agricultural productions is impossible. The role of the national government policies, within the existing supranational forms and methods of regulating the agrarian sector, remains crucial.

Actually, this is exactly the difficult moment – compliance with the supranational regulatory policy implemented

by the EU, together with the establishing of mechanisms and competences for conducting an internal, independent and responsible policy dictated by the specifics of the national agriculture, which to a large extent should be in harmony also with the solution of problems related to the time-constructed product sets for satisfying the domestic needs and the significant increase in the degree of compliance of the agricultural production with them. In practice, there is no country, including in the EU, where the formation of the agricultural production is independently, solely and only under the influence of the market mechanisms.

Observations show that the attitudes of the population predetermine relatively standard behavior in the food consumption. The characterization of the satisfaction of the nutrition needs is done using the consumption norms of main groups of food products. Without being absolute, they relate to the consideration of many factors, among which are the physiological characteristics by gender and age, the working conditions, the way of life of the population in the country, etc. This allows to use them in observations, revealing and justifying characteristics of the food consumption from various aspects, clearly linked by specific target segments, such as territorial (towns/villages), qualitative (proteins/fats/carbohydrates), product (food groups, intra-group composition). In this way, the ability of the institutions to respond to different types of problems, to which the food consumption is sensitive, can be improved.

### *Structure of the consumption*

The benchmark product structures are not static and evolve over time. The composition and the ratios between the different groups, as well as the intra-group structures, have no absolute meaning. Their recommending nature allows for interchangeability and combination, mostly for the achievement of quantitative satisfaction. It is important to note that the ratios expressed through the obtained nutrition energy from proteins, fats and carbohydrates, give an idea of the formation of an appropriate structure related to the qualitative nature of the food consumption. From the point of view of the healthy diet, proteins intake deserves attention. The high share of proteins of animal origin (about 4/5 of the average reference value of their mixed origin (animal and plant)), is an important indicator of the quality of diet.

Achieving a balance, according to the requirements formed with the national dietary norms, as a variety of the consumed product groups and of the products in the different groups, is a necessity, meeting the modern requirements for nutrition security and quality of life, guaranteeing health and opportunities for building social competences.

**Seven main groups** are identified in the structure of the

total food consumption. They consist of products with traditionally high use in the daily satisfaction of vital food needs of protein, carbohydrates, vitamins, minerals, etc. In order to increase the objectivity in the assessment of the structural changes, the interpretative process is clearly linked to the beneficial and valuable characteristics of these products, from which the main constituents in the observed groups also originate.

In this regard are established also relative requirements related to quantification. In accordance with this, a wide range of indicators by the structural elements of risk management are set – relatively static recommended norms; norms with consumption movement within reference minimum/maximum limits; norms with determination of only a minimum lower limit, without restrictions on the quantities consumed above it.

The products in the *first group* (rich in starch) have a sustainably high share in the total nutrition energy intake. The consumption, despite a significant decrease in all the years after 2000, remains within the limits of the scientifically based norm in a nutrition corridor (110–183 kg). The data from the monitoring of “Household budgets in the Republic of Bulgaria” show that in 2000 the consumption is 1.9% below the upper threshold of the recommended annual consumption quantities. In 2022, it is already 35.2% and 7.7% respectively below the maximum and above the minimum recommended norm of intake. This product group sustainably remains the leader in the structure of the total provision of nutrition energy, despite its shrinking share – from 38.7% in 2010 to 32.1% in 2021.

The consumption of bread and paste products occupies an important place in the group. Although there is a permanent trend of reduction both in kind and in share, this is the position that traditionally remains with the highest share in the total consumed quantities. The intensity of the changes is strongest until 2015.

Changes in the consumption show also the consumption of other cereal products and foods. They are strongest until 2005, after then the consumption stabilizes and remains relatively constant.

Significant differences are observed in the consumption of the products from this group when analyzed by place of residence – until 2015 it exceeds the upper limit of the recommended norms in the villages. It remains high also until now – slightly below the upper threshold of the healthy norm.

An important component for sustainable healthy diet is the consumption of the products in the *second group* – fruits and vegetables, rich in vitamins, fibers, minerals and biologically active substances. Changes in their participation in the

nutrition structure are an essential indicator of the quality of the food consumption. This is also one of the reasons that the recommended norm for their consumption has only a minimum lower limit – 146 kg, which is tied to reducing the probability of unlocking negative health effects.

There is a trend of an increase in their consumption in the period 2005–2021 compared to 2000. The most significant growth is in 2021, when the defined critical minimum is exceeded by 10.6%. In 2022, the consumption returns to the 2020 level, but remains 7.5% above this minimum.

Traditionally, the consumption of vegetables have a higher share in this group. They are one of the main components in the consumers’ diet, making them important also for achieving food security in the feeding of the country’s population (Dimitrova, Branzova, 2022).

With the exception of 2005, there is an increase in the fruit consumption in this group. The reason is the increase in the consumption of tropical fruits in this group (from 5.2% in 2005 to 11.5% in 2022).

The analysis of the structural changes by place of residence shows that until 2015 in the villages the total consumption in this product group is above the country’s average and above that in the cities. Despite the decline registered after that, it remains above the critical physiological minimum.

Traditional part of the daily consumption is the products in the *third group* (milk and dairy products) – rich in protein, calcium, vitamins, animal fats. Their numerous qualities make them main food in any full intake. The range of the standard corresponding to the recommended physiological norm is tied to the input raw material – milk (146 l/150 kg). On this basis the level of consumption in the group as a whole remains within the dietary recommendations. After 2005 the deviations by years are not significantly outlined.

The intra-group structure goes through more dynamic changes. This contributes to a relatively more balanced consumption model, compared to the one followed for a long time (towards one product – milk). The dynamics of its share in the consumption in this nutrition group in the entire period after 2000 is indicative – from 46.4% (2000) to 28.6% (2021).

It is important to note that there are no restrictions related to the participation shares of the different products, but their consumption varies in a different range by place of residence. In the period 2005–2021, the biggest deviations are in the consumption of cheese and other dairy products – in the villages they remain below the average consumption in the country in most years.

It should be noted that in some of the consumed products in this nutrition group a lower share of the base raw material is used, due to its supplementation with substitute

components of plant origin. The scope of such indicator is not statistically identifiable, which does not allow tracking, ascertaining and commenting on discrepancies that are undoubtedly present when establishing a relation between quantity, quality and benefits in this product group.

What was mentioned about the quality characteristics can be transposed also to part of the consumption of products (meat products) in the *fourth group*, which are rich in animal protein. For some of them, consumption is recommended within reference annual limits – fish and fish products (16–22 kg), eggs (90–180 pcs.). In the case of meat and meat products, the quantities are limited only by an upper limit, which the actual consumption in kind exceeds by about two times.

Compared to 2000, in the period 2005–2021 the movement lines in all four product subgroups clearly outline trends of the consumption growth. This process is most active until 2015. Concerning meat – pork, poultry and minced meat have the highest share in the consumption. From 73.1% in 2005, their total share in the consumed quantities of meat reaches 86.5% in 2022. The upward trend in the consumption of meat products is also noticeable – compared to 2020, their consumption increases by 8.9% and 14.9% respectively in 2021 and 2022. Concerning eggs, the consumption (almost equally distant from the minimum and maximum parameters of the norm until 2015) in 2022 reaches a level only 11.1% below the norm of the maximum recommended annual consumption. The consumption of fish and fish products, despite an increase in intake, remains far from the limit of the physiological minimum – even the highest registered level in 2021 is only 38.8% of the minimum recommended quantities.

In a territorial aspect, there are no significant differences in the total consumption of the studied four product subgroups. However, an important nuance stands out in the share of this product group, measured as nutrition energy – this share is sustainably higher in towns (14.5% in 2015 and 15.8% in 2020) compared to villages (11.9% in 2015 and 13.8% in 2020). This imposes the conclusion that the ration in the villages, from the point of view of the healthy diet, is better balanced.

The consumption of the products in the *fifth group* is based on protein-rich legume products of plant origin and nut fruits. The legumes are important due to the saturation of proteins and the similarity of their composition to that of meat, fish and eggs, and due to the mineral and vitamin composition, which makes them similar to bread and cereal products. Mainly two products are present in the diet – kidney beans and lentils. The consumed quantities in 2021 are only 22.1% of the recommended norm. Concerning the nut fruits, the consumption is the highest also in 2021 (about 1/3

of the recommended intake volume). Confirmed is the imposed over the years undervaluation of this product group, obviously not corresponding to its possibilities to contribute to the improvement of the nutrition security.

Important for the nutrition security are the products in the *sixth group*, providing intake of added fat, despite the more reserved assessments about the benefits of their intake. However, the concerns about adverse effects on the health should not be ignored, due to the fact that this nutrition group includes products containing two main categories of fat – saturated and unsaturated. In fact, fat itself is not unhealthy. It is one of the three macronutrients (along with carbohydrates and proteins) that are important for the nutrition security, and affect the absorption of a number of fat-soluble vitamins (A, D, E, etc.) that are essential for human health.

All this points to problems with the adequacy of their intake, outlined as quantitative and qualitative parameters. This should not be neglected when looking for benefits of the consumption of products from this nutrition group. Possible changes for their healthy consumption relate mainly to changes of the dietary habits.

Concerning the products in the *seventh group*, containing large amounts of sugar, it can be unequivocally claimed that the utility effect is the opposite of consumption increase, i.e. the maxim “less is better” applies. At the same time, tracking the dynamics of the consumption does not question the trend towards an increase in the consumption of products from this group and an increase in their share in the total intake of nutrition energy. In 2021 its increase is 21.8% compared to 2010.

The conducted analysis and the drawn conclusions about the changes in the structural characteristics of the consumption, the assessments and their compliance with the institutionally accepted consumption norms, are made on the basis of official information – from Regulations of the Ministry of Health, National Statistical Institute (Household budgets in the Republic of Bulgaria), Healthy Diet Recommendations and Analyses of the National Center for Public Health.

### *The role of the imports*

The unfavorable trend of dependence on imports in providing the country with products rich in complete protein maintains. The main reason is the low self-sufficiency in meat. Imports solve serious quantitative problems – with a share of 33.7% in the total consumption of meat in 2005, 44% in 2010 and 40% on average in the period 2017–2021. The share of imports in the consumption is the highest for pork – from 31.7% in 2005 it reaches 62% in 2010, and average around 60% in the period 2017–2021. Compensating for the shortage of national resources through imports is tak-

en into account also when providing the country with milk and dairy products. The import of dry and concentrated milk dominates, as well as of raw cow milk – an unknown import position for Bulgaria until 2006 and registering a large growth in the period after 2014. If there are no “revolutionary” changes in the country in the milk production sector (there are no expectations of such), the import will remain an important source influencing the volume, dynamics and structure of meeting the national needs.

Covering the consumption of vegetables and fruits, which are basic in the eating pattern in Bulgaria, can be defined as dependent on the imports in unacceptable volumes. In the period 2017–2021, the average shares of the external resource in the consumption volumes are the following: tomatoes – 36%; cucumbers – 21%; pepper – 31%; cabbage – remains at about 14%. For onions, the share of the external resource in consumption remains significant, although the pressure of imports from 62% in 2008 has been reduced to about 48%. The choice to focus on these five products is not accidental. Over the years, their share in the total consumption of vegetables has remained significant – in 2005 it is 81.9%, in 2010 – 77.3%, and in 2022 – 77.8%. It is also important to note the imports activity in the fruit consumption. A large part is covered by types with no climate conditions for their production in the country. The import is active also for the consumption of sorts with traditions in their cultivation in the country. The share of imports in the consumption of apples is high (58.2% in 2005 and 52% on average in the period 2017–2021), peaches (24.5% in 2005 and 42% on average in the period 2017–2021).

The analysis on the impact of the imports on the food security of the country uses official data – from National Statistical Institute, Ministry of Agriculture, National Customs Agency. The analysis shows that in the groups with high share in the domestic consumption, and taking into account their importance for ensuring the needs and as well as from a physiological point of view, only one of the analyzed nutrition groups (for products rich in starch) the import does not play a significant role. This is a fact in the entire period (2005–2022) and shows the presence of serious problems in using the national resources to secure the country’s population with food.

## Conclusion

In general, the observed changes confirm the sustainable nutrition preferences from a consumer point of view. However, some of them develop and lead to positive transformations in the nutrition security parameters. These include the changes in the nutrition groups, including products rich in starch (cere-

als and potatoes) and in protein, calcium, vitamins and animal fats (milk and dairy products). In other groups, the consumption trends are rather negative. These are the groups ensuring intake of added fats (vegetable oils and animal fats) and large quantities of sugar (sugar, chocolate and confectionery, and soft drinks). However, the outlined negative trends in the general consumption of products rich in protein of animal origin (meat and meat products, fish and fish products), of products rich in protein of plant origin (legumes and nut fruits) and of products rich in vitamins, fibers, minerals and biologically active substances (fruits and vegetables).

Providing the population with sufficient quantities of foods with high biological value of national origin remains a challenge for the country’s food and nutrition security. The significant place of the imports in satisfying the actual consumption shows that with the implementation of the CAP only to a modest extent some of the problems are mitigated, but the main problem from the point of view of Bulgaria as a sovereign state – reaching a high degree of self-sufficiency, i.e. of relative food independence in terms of basic nutrition groups and products, remains.

In order to solve the outlined problems, a careful reconsideration of the premises and conditions for stimulating and optimizing the national production and its binding with the food and nutrition security are outlined as imperative.

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