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PROVIDING FOOD SECURITY IN ROMANIA. CHALLENGES AND FINANCING

ABSTRACT

In the current geopolitical context, food security has become once again a very important target. The paper presents Romania's current situation, analysed on the basis of GFSI (Global Food Security Index) developed by Economist Intelligence Unit/ Economist Impact (EIU). The guarantee of an objective analysis is to examine the Romanian food security situation based on the interpretation of indicators that are recognised at international level.

Food security in Romania is challenged by the current socio-economic context like in many other EU member states. The major challenge is the European strategies aiming at a greener agriculture according to the European Green Deal. This is reflected in the way the agricultural sector is financed, meaning a greener CAP budget.

Key words: food security, agriculture, environment, GFSI (Global Food Security Index), European Green Deal, agricultural policies, green budget.

JEL Classification: Q18, Q15, Q14.

1. INTRODUCTION

The situations occurred in the recent years have put pressure on the agro-environmental policies of the future. All member states are thinking about efficient agriculture, but it seems that once again this should aim food security for the population.

This study has as main objective the analysis of food security in Romania and its challenges: "Farm to Fork" Strategy and the financing of the agri-food sector according to the CAP budget.

2. STATE OF KNOWLEDGE

José Graziano da Silva, ex general director of Food and Agriculture Organisation (FAO) of the United Nations, was at the forefront of global initiatives to eradicate hunger. The FAO activity in the field of food security is already notorious. FAO has never ceased to treat the food security issue globally, and more

recently has begun to address the resilience of agri-food systems: FAO (2014), FAO (2021). OECD also weighed in on the idea of using better policies for the food industry, and in 2022 it analysed the impact of Ukraine war on agricultural markets and agri-food policies: OECD (2021), OECD (2022).

There are also both older and recent concerns of different authors regarding food security, such as Pinstруп (2009), Pangaribowo *et al.* (2013), Swinnen (2015), Alexandri *et al.* (2015), Alexandri *et al.* (2020), Luca *et al.* (2022). Recent concerns regarding the assessment of food security in Romania include the 2022 initiative of the Ministry of Foreign Affairs (through the European Institute of Romania), and in 2023 the initiative of the Romanian Academy to update the strategy for food security and safety, developed in a first version in the period 2015–2016. In the last three years (2020–2023), the COVID-19 Crisis, the geo-political crisis generated by the war in Ukraine and the energy crisis have put pressure on the agro-environmental policies. In the Chamber of Deputies, an information factsheet “Emergency Plan to guarantee food supply and food security in time of crisis” was developed: Ioniță & Barbu (2022).

The economist Amartya Sen, a Nobel Prize winner in Economic Sciences (1998) for outstanding work in welfare economics, called attention on the fact that hunger and starvation are often not due to the lack of food, but rather to inequalities in food distribution and access. That is why food security must be analysed in detail, in all its dimensions.

There is an advanced state of knowledge of the current situation of post-2020 agro-environmental policies, as a specific legislative framework is in place: EU (2021a), EU (2021b), EU (2021c). The strategic objectives are clearly deduced in the National Strategic Plans in the EU member states, as well as from the level of financial allocations for the measures included in SP 2023–2027.

The EU’s current environmental strategy is the “European Green Deal” (EC, 2019). This package of policy initiatives, with the declared goal to achieve climate neutrality by 2050, aims to mainstream sustainability into all EU policies. The following initiatives have a maximum impact on agriculture, food industry and agro-environmental policies: EU Biodiversity Strategy 2030 and “Farm to Fork” Strategy” (EC, 2020a; EC, 2020b).

It is quite difficult to develop a food security index that accurately captures the complexity of this phenomenon, of “greening” in agriculture, food industry and environmental policies. Last but not least, even the global food system itself has slightly negative implications on food security, in certain situations (Patel, 2012).

That is why we consider that the GFSI index, developed by the Economist Intelligence Unit/ Economist Impact, which has been used since 2012, is necessary, sufficient, complete and trustworthy. It was created at the request and with the help of DuPont/Corteva, with the stated goal of making it easier to find solutions to food security problems in each country (EI, 2021). Another pro GFSI argument is that it is a tool already used in the research works on 113 countries in the world,

facilitating comparability between the food security dimensions in all these countries (EIU, 2012). The FAO database and indicators represented a second modality to analyse the food security situation in Romania.

3. MATERIAL AND METHOD

The bibliographic material used, to which reference has been made, includes documentary materials, data and information from the literature, scientific articles, relevant publications and books in the field, analyses and studies, as well as articles from the specialised press. From the category of public documents, the current EU legislation was used, as well as official documents of different national and international bodies (Ministry of Agriculture and Rural Development, the European Institute of Romania, Ministry of Foreign Affairs, FAO, OECD, EU).

In the case of GFSI methodology, the research tools were based on the comparative method provided by GFSI, analytical (quantification for each GFSI indicator) and descriptive (analysis of the “greening” of agricultural policies). The databases used were from the Economist Intelligence Unit/ Economist Impact (EIU), in which the indicators of the four dimensions of food security for 2022 were found, with the following weights: Affordability 30% (32.4% in 2021), Availability 25% (32.4% in 2021), Quality and Safety 22.5% (17.6% in 2021), Sustainability and Adaptation (previously named Natural resources and resilience) 22.5% (17.6% in 2021). According to Table 1, we can see the indicators of the four dimensions and their weight in the scores obtained by the 113 countries included in the GFSI analysis.

Table 1

The four dimensions of GFSI methodology and percentage of indicators in year 2022

1) AFFORDABILITY	30.00
1.1) Change in average food costs	23.85
1.2) Proportion of population under global poverty line	19.23
1.3) Inequality-adjusted income index	16.92
1.4) Agricultural trade	19.93
1.5) Food safety net programmes	20.77
2) AVAILABILITY	25.00
2.1) Access to agricultural inputs	11.71
2.2) Agricultural research and development	11.71
2.3) Farm infrastructure	9.01
2.4) Volatility of agricultural production	11.26
2.5) Food loss	11.26
2.6) Supply chain infrastructure	9.91
2.7) Sufficiency of supply	11.71
2.8) Political and social barriers to access	10.81
2.9) Food security and access policy commitments	12.61

Table 1 (continued)

3) QUALITY AND SAFETY	22.50
3.1) Dietary diversity	19.50
3.2) Nutritional standards	20.33
3.3) Micronutrient availability	19.51
3.4) Protein quality	20.33
3.5) Food safety	20.33
4) SUSTAINABILITY AND ADAPTATION (former NATURAL RESOURCES AND RESILIENCE)	22.50
4.1) Exposure	17.00
4.2) Water	16.50
4.3) Land	16.50
4.4) Oceans, rivers and lakes	15.50
4.5) Political commitment to adaptation	19.00
4.6) Disaster risk management	15.50

Source: Based on data from Global Food Security Index 2022 (Economist Impact, 2022).

In the FAO methodology (Table 2) four dimensions of food security are also taken into consideration, partially different from those of GFSI, namely: i) Supply availability, ii) Access to food, iii) Supply stability and iv) Food utilisation. This methodology is used in the assessment of food security at macro-economic level, at world, regional and national level respectively. For the assessment of food security at micro-economic level, another set of indicators is used by FAO, which come from the Family Budget Surveys and the Nutrition Surveys.

Table 2

The four dimensions of FAO methodology and its main indicators

	1) SUPPLY AVAILABILITY
1.1	Adequacy of daily calorie diet
1.2	Average value of food production
1.3	Share of calories from cereals and roots in the daily diet
1.4	Available protein supply
1.5	Available animal protein supply
	2) ACCESS TO FOOD
2.1	Density of railway network in 100 km ² of land
2.2	Gross Domestic Product per capita at purchasing power parity
2.3	Prevalence of malnourished population
2.4	Share of food consumption expenditure in total consumption expenditure for the population in the lower quintile
2.5	Extent of food deficit
2.6	Prevalence of population with an inadequate diet
	3) SUPPLY STABILITY
3.1	Share of land equipped with irrigation facilities in total arable land
3.2	Value of food imports in total exported commodities
3.3	Index of political stability and absence of violence in the public space
3.4	Variability of food production per capita
3.5	Food supply variability

Table 2 (continued)

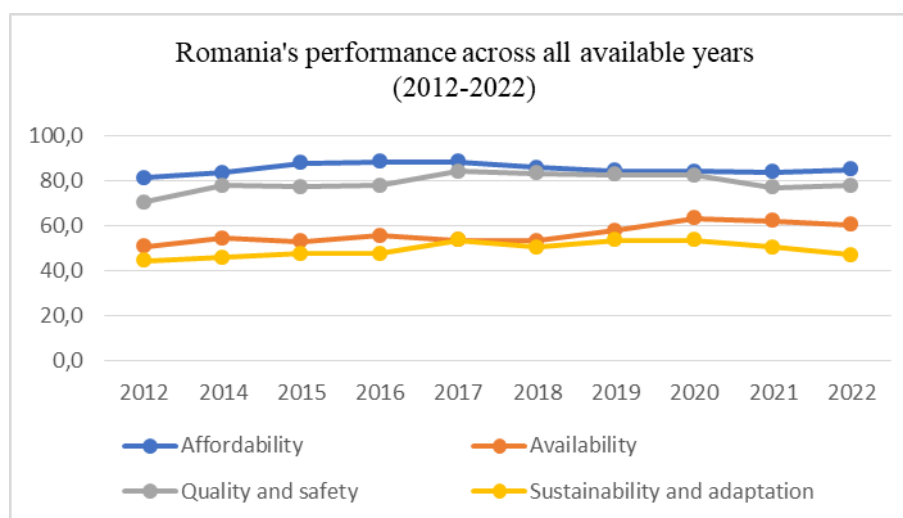
4) FOOD UTILISATION	
4.1	Population access to improved drinking water sources
4.2	Share of the population with access to improved sanitary facilities and sewerage system
4.3	Percentage of children under 5 years at risk of being wasted due to malnutrition
4.4	Percentage of stunted children under 5 years due to malnutrition
4.5	Percentage of underweight children under 5 years
4.6	Percentage of overweight adults in total adult population
4.7	Presence of anaemia in pregnant women
4.8	Prevalence of severe food insecurity
4.9	Prevalence of severe and moderate food insecurity

Source: Based on data from Luca *et al.*, 2022.

4. RESULTS AND DISCUSSIONS

4.1. FOOD SECURITY ANALYSIS

Global Food Security Index (GFSI) in its 11th edition (2022) includes four dimensions: affordability; availability; quality and safety; sustainability and adaptation. Throughout the GFSI analysis period (2012–2022), Romania had a good food security performance (Figure 1), in the sense that all four dimensions experienced improvements, yet with a slight decline in the last three years (2020–2022) in terms of food availability, sustainability and adaptation. This is the general trend, as a result of the COVID-19 pandemic and the Ukraine war.



Source: Based on data from Global Food Security Index 2022 (Economist Impact, 2022)
Figure 1. Romania's performance in the GFSI analysis period.

The 11th GFSI edition shows a deterioration of the global food environment for the third consecutive year, which may pose a threat to food security. In a global context, Romania's food security situation, as reflected by the scores assigned to the four dimensions, had an overall "moderate" rating (with a score of 68.8 of 100 points) in the year 2022. Italy had a 74.0 score, Poland 75.5, and France 80.2 (very well).

The "moderate" rating is the result of higher scores in affordability ("very good" rating) and in quality and safety ("good"). According to Table 3, there are lower scores in availability ("moderate" rating) and sustainability and adaptation ("weak" rating). These scores suggest that food security vulnerabilities in Romania may occur from these two directions, namely from food supply and environmental conditions.

Table 3

Food security environment for a group of EU member states in the year 2022

	Romania	France	Italy	Poland
Affordability	85.1	91.3	89.5	87.4
Availability	60.6	69.0	68.7	63.8
Quality and safety	77.9	87.7	75.9	81.5
Sustainability and adaptation	47.1	70.3	57.3	66.7
Total	68.8	80.2	74.0	75.5

Source: Global Food Security Index 2022 (Economist Impact, 2022).

According to **GFSI methodology**, the breaking down of scores by indicators reveals in more detail the very good and good scores, as well as the weak points in food security (Table 4).

By comparison, in France, Italy and Poland, the food security situation is similar to that of Romania in terms of **Affordability**. The general rating is "very good", with over 80 points. France performs better, with over 90. Strictly analysing Romania's situation, the weak point of affordability is the Inequality-adjusted income index, whose evolution is justified by the economic and social events of recent years, aggravated by the climate and health crisis.

For the **Availability** indicator, all four member states have a score ranging from 60 to 69, a "moderate" rating respectively. In this case, Romania scores 60 points, and France 69 points out of 100. Romania's low score has two main causes:

- Volatility of agricultural production. The weather conditions and the COVID19 pandemic determined the increase of volatility on international commodity markets, while the agricultural sector had to face challenges related to the availability of cereals and other agricultural commodities used for both food and feed.
- Food security and political commitments regarding access. A food security strategy is needed (at the moment, Romania does not have a food security assumed at official level) and a government agency for the implementation of this strategy.

In terms of **Quality and safety**, Romania and Italy have a good score (above 70), while France and Poland in particular have a very good score (over 80). From this point of view, Romania has a less favourable situation with regard to:

- Dietary diversity. It measures the share of non-carbohydrate foods (cereals, edible roots and potatoes) in total human consumption expressed in calories. A higher share of foods that contain fewer carbohydrates is considered a premise of a greater dietary diversity.
- Nutrition standards. This is a qualitative indicator that evaluates the existence of national nutrition programmes, of nutritional recommendations at national level, as well as the existence of a monitoring system for the population categories at nutritional risk.

Since 2022, food safety has also included legislative aspects as compared to 2021.

As regards the food security dimension **Sustainability and adaptation** (formerly known as “Natural resources and resilience”), the situation is different: France has a good score, Italy and Poland have a moderate score, while Romania has a weak score, proving the fact that it is not sufficiently prepared to face the structural crises of the system or the conjunctural socio-economic crises. This situation is caused by the fact that climate effects on natural resources are not sufficiently regulated by representative policies. Four out of six sub-indicators were rated as “weak” or “very weak”: 4.2) water, 4.4) oceans, rivers and lakes, 4.5) political commitment to adaptation and 4.6) disaster risk management.

Table 4

Romanian Food Security Environment in 2022

GFSI Indicator	Scores (100 = best conditions)	Colour code
1) AFFORDABILITY		85.1
1.1) Change in average food costs	84.0	
1.2) Proportion of population under global poverty line	95.8	
1.3) Inequality-adjusted income index	66.4	
1.4) Agricultural trade	76.0	
1.5) Food safety net programmes	100.0	
2) AVAILABILITY		60.6
2.1) Access to agricultural inputs	73.8	
2.2) Agricultural research and development	59.1	
2.3) Farm infrastructure	71.8	
2.4) Volatility of agricultural production	37.4	
2.5) Food loss	92.9	
2.6) Supply chain infrastructure	53.4	
2.7) Sufficiency of supply	95.9	
2.8) Political and social barriers to access	68.0	
2.9) Food security and access policy commitments	0.0	

Table 4 (continued)

3) QUALITY AND SAFETY		77.9
3.1) Dietary diversity	61.4	
3.2) Nutritional standards	61.3	
3.3) Micronutrient availability	71.4	
3.4) Protein quality	99.6	
3.5) Food safety	94.8	
4) SUSTAINABILITY AND ADAPTATION		47.1
4.1) Exposure	66.2	
4.2) Water	36.2	
4.3) Land	74.0	
4.4) Oceans, rivers and lakes	6.4	
4.5) Political commitment to adaptation	44.7	
4.6) Disaster risk management	52.9	
Food Security Environment		68.8

Source: *Global Food Security Index 2022* (Economist Impact, 2022).

Legend:

	Scores 80–100 [very good]
	Scores 70–79.9 [good]
	Scores 55–69.9 [moderate]
	Scores 40–54.9 [weak]
	Scores 0–39.9 [very weak]

According to **FAO methodology**, the four pillars of food security are: Supply availability, Access to food, Supply stability and Food utilisation.

Supply availability. Adequacy of daily calorie diet and Average value of food production, calculated as a three-year average, have similar values for Romania, France and Poland. The share of calories from cereals and roots in the daily diet, representing the daily energy (kcal/capita/day), reveals a qualitative aspect, namely that population's dietary diversity is lower in Romania compared to France and Poland. The daily (animal) protein availability, expressed in grams/capita/day, is also a qualitative indicator of a country's food supply. In the period 2000–2018, an improvement in availability was noticed, while in France this qualitative aspect slightly decreased.

Access to food. Romania's Gross Domestic Product at purchasing power parity (\$ 2017) increased in the period 2015–2021 by a growth rate similar to that of Poland (+7000, from 23878 to 30855), both countries reducing their existing gaps with France's GDP (45187 in 2021). The *Prevalence of malnourished population* (in percentage) represents that the probability that by randomly selecting a person from the population, this will have an insufficient food consumption, which will not provide the necessary calories for leading an active and healthy life. In the period 2015–2021, the percentage was under 2.5% in Europe, including France, Poland and Romania. Worldwide, the *Prevalence of the population with an inadequate diet* is decreasing.

Supply stability. This refers to Romania's ability to ensure population's food consumption needs from domestic agricultural resources (self-sufficiency). The main analysed indicators are:

- The stability of agricultural production under drought conditions is ensured by a highest possible percentage of land equipped with irrigation facilities in total arable land;
- The value of food imports in total exported commodities represents the country's ability to import food in case of need and the availability of financial resources when needed.
- Political stability and absence of violence in public space is an indicator ranging from -2.5 (low stability) to 2.5 (high stability), Romania and Poland having a score close to 0.58.
- The variability of (net) food production per capita (in international dollars) appears to be higher in Romania, under the background of stronger variability of agricultural production and high share of imports in certain products. In the period 2005–2019, the variability of food production in Romania decreased from 80.5 to 61.8 (yet it is double than that of France and three times higher than that of Poland).
- The variability of food supply expressed in calories/capita/day is calculated in a similar manner, using the standard deviation formula. Its evolution is presented in Table 5.

Table 5

Variability of food supply in kcal/capita/day

	2006	2008	2010	2012	2014	2016	2018	2020
Romania	31.0	25.0	19.0	20.0	21.0	90.0	77.0	43.0
France	44.0	36.0	36.0	36.0	28.0	48.0	64.0	45.0
Poland	30.0	29.0	26.0	52.0	31.0	52.0	37.0	48.0

Source: Data from FAO database, 2022.

Food utilisation

- Population access to improved water sources. The condition of at least 20 litres/person/day, less than one kilometre distance from household, was fulfilled 99% in Romania (also in France and Poland).
- The share of population with access to improved sanitary facilities and sewerage system. In the year 2006, in Romania, only 75.6% of households had access to modern sanitary infrastructure. In 2020, this percentage increased to 87.1%. In most EU member states, this percentage is almost 100%.
- The percentage of children under 5 years at risk of being wasted due to malnutrition is high for countries outside Europe. In Romania, this percentage was 3.5% in the year 2002. In Poland, this percentage was only 0.7% in 2011.

- The percentage of stunted children under 5 years due to malnutrition was 11.1% in Romania in the year 2010, down to 9.7% in 2020. Similarly, in the same period, this percentage decreased from 2.4% to 2.3% in Poland.
- The percentage of underweight children under 5 years decreased in Romania from 10.3% in 2010 to 6.7% in 2020, while in Poland it increased from 5.6% to 6.7%.
- The percentage of overweight adults in total adult population increased mainly in developed, high-income countries, where food consumption increased mainly in terms of foods rich in sugar and fat. In Romania, this increased from 19.8 in 2010 to 22.5 in 2016. A similar evolution was noticed in Poland and France.
- The presence of anaemia in pregnant women (15–49 years) decreased, from 34.5% in 1990 to 26.0% in 2011.
- The prevalence of severe food insecurity refers to the situation when there is no food in the household throughout the day, for one adult at least, who has to skip meals or starve for an entire day due to lack of money or other resources. The percentage of population under severe food insecurity was 3.4% in the period 2018–2020, three times higher than in France or Poland.
- Severe or moderate food insecurity occurs when at least one adult in a household is exposed to insufficient nutrition in terms of quantity and quality throughout the entire year. The share of population under severe and moderate insecurity is 14%, double than that in North America or Europe (France or Poland).

When analysing food security situation in Romania, first of all, a difference must be made between objective information and people's subjective perception. For example, in the inter-war period, Romania was considered an agricultural power in Europe, due to its positions in the cereal market, but population's food situation was precarious, if we take into consideration two aspects: i) In the rural area, where 80% of the population was living, the basic foods were cereal-based products (230 kg/capita/year), of which maize flour had the highest share; ii) Meat consumption was extremely low: 21 kg/capita/year in 1938.

In the communist period, a quantitative and qualitative improvement of food consumption took place until 1980, as a result of an increase in the purchasing power, but afterwards, under the impact of centralised economy crisis, the decline towards an increasingly frail domestic food supply began. It should be noted that throughout the communist period, the share of food expenses was 46–50% in total consumption expenses, which actually reflects the state of poverty of the population.

A period of uncertain and hesitating transition followed, as a result of an agri-food policy lacking continuity, and in the period that followed, the population's living standard continuously deteriorated, implying negative changes of food

consumption in quantitative and qualitative terms, materialised in the increase of food expenses up to 57% (in the year 1998).

After 2000, food consumption in Romania reflected the characteristics of an emerging economy, with a demand increase potential, both quantitatively and qualitatively. There is an unsaturated and very elastic demand for products considered nutritionally superior (protein). The share of food consumption expenditure in total expenditure of households has decreased in recent years, from 41.7% in 2011 to 33.4% in 2021, but this is one of the highest values in the EU member states; for developed countries the values of this indicator are generally between 10 and 15%. There is an urban-rural gap, in the sense that in the rural area, where incomes are lower, the share of food expenses (which also include self-consumption) reached 37% in 2021. The gap between the two residence areas in terms of share of food consumption expenditure is the result of the deeper poverty in rural areas.

The self-sufficiency rate (or self-supply) is generally above 100% in the group of cereals and cereal products, as production exceeds the availability for consumption. There are groups of products with a high level of self-sufficiency, of over 80%, like potatoes, vegetables, milk and dairy, eggs, poultry meat and plant and animal fats; there are also groups of products with a low self-sufficiency level, such as pork, fruit, fish and sugar.

In Romania, raw products are produced in large quantities (cereals and oilseeds), but there is a high dependence of domestic consumption on imports, which calls into question the efficiency of the Romanian supply and processing chains. In the period 2018–2020, the dependence of domestic consumption on imports was 21% in vegetables and vegetable products, 26% in wheat and rye and products based on these cereals, 31% in plant and animal fats, 34% in fruit and fruit products, 48% in pork and pork products, 85% in sugar and sugar-based products and 88% in fish and fish products. Food demand in Romania is increasing in many staple products, like meat, fish, fruit and vegetables.

4.2. CHALLENGES DUE TO THE EUROPEAN GREEN DEAL

The identification of current and future challenges to Romania's food security, to the implementation of EU greening strategies, was based on the results of a study conducted by INRAE on the effects of climate change on agricultural production, an FAO study on the resilience of food systems, which includes indicators calculated for Romania, as well as studies that estimate the impact of implementing the targets of "Farm to Fork" Strategy on agricultural production, prices and international trade, in an attempt to find an approach that will bring together policy-makers and farmers' representatives in the transition to sustainable food systems.

In the context of concerns related to food security as a result of climate change, in a complex study published in 2020, INRAE analysed the double challenge facing European agriculture: reducing agriculture impact on the

environment and maintaining the production level to cover domestic and global demand. Thus, the quantification of climate change effects on agricultural production at global and European level highlighted expansion trends of cultivated areas worldwide (depending on the evolution of yields), which means an increase of cultivated areas in certain regions (for example, in Latin America) and a decrease in the need for cultivated areas in other regions (for example, in the ex-Soviet area). Such situations can be also found in Europe, Romania being in a region that will have a “land surplus” (a decrease in the need for cultivated land), according to the model results. World trade will increase until 2050, without changes in current positions (net exporters will continue to export and net importers will continue to import), with the specification that in Europe it is estimated that all regions will improve their trade positions, in the sense of increasing exports for net exporters and decreasing imports for net importers.

At the level of national agri-food systems, a 2021 FAO report that estimates countries’ resilience to shocks and stress, as a function depending on several factors (existing domestic agricultural production system; availability of food for consumers from domestic production, stocks or imports; efficiency and flexibility of food transport systems to facilitate domestic trade and ensure physical access to food; population’s economic access to food), calculated two categories of flexibility indices, i.e. the *Primary Production Flexibility Index* and the *Food Supply Flexibility Index*, for several countries, including Romania. The *Primary Production Flexibility Index* reflects the ability of the agricultural sector to absorb shocks; a higher value of this reveals a greater potential for capitalising on production and finding outlets for primary production (here, according to the FAO analysis, Romania has a better situation than France and Poland in terms of primary protein production flexibility). The *Food Supply Flexibility Index* measures the flexibility in the supply of a specific food unit, to evaluate the role of diversification in domestic production, in stocks and imports, so as to ensure the availability of foods that lead to a healthy diet (here Romania lags behind Poland and France, but maintains a similar profile, with a high diversity of domestic production).

In the European Union, the core objective of the “Farm to Fork” Strategy, adopted in 2020, is the creation of a food chain that works for consumers, producers, environment and climate, targeting three main results: ensuring that the entire food chain has a neutral or positive environmental impact; guaranteeing everyone’s access to sufficient, nutritious and sustainable food; ambition to make the most sustainable foods also the most affordable. For the transformation of production methods, the strategy has proposed certain specific objectives at European level, expressed as quantitative targets for the year 2030 (reducing the use of chemical pesticides by 50%, reducing the use of chemical fertilisers by at least 20%, reducing the sale of antimicrobial substances for animals by 50%, increasing the share of agricultural land for organic farming to at least 25%), which should be materialised by including them in the national CAP strategic plans.

An estimation of the impact of these targets by USDA, in 2020, for three scenarios of progressive adoption of the European Green Deal objectives (“EU only”, “middle” and “global” scenarios), concluded that the proposed reductions in inputs affect EU farmers by reducing farm production by 7–12% and lead to the diminution of their competitiveness on domestic and foreign markets. Beyond the impact of adopting these constraints on agricultural production and prices, trade and certain economic indicators (gross agricultural income), the impact on food security in certain regions was also estimated, measured by the increase in the number of food insecure people (by 22 million in the “EU only scenario”, by 103 million in the “middle scenario” and by 185 million in the “global” scenario), the most affected being the regions in Africa, Middle East and North Africa.

The results of such estimates, as well as the first regulation proposals from the European Commission (Pesticide Regulation), have resulted in some reluctant positions of farmer representatives at EU level (specifically, COPA-COGECA concerns are related to the diminution of agricultural production, as a result of reductions in the use of pesticides, fertilisers and antibiotics) and at national level (also in Romania). However, Romanian farmers’ positions (expressed by the officials of a representative organisation for field crops) regarding this strategy are more nuanced, leaving room for a hope that a combination of measures can be identified that could bring the visions of European decision-makers and Romanian farmers to a common denominator, by using the three great categories of instruments available to the government: incentives (mainly financial support from EU and national funds), constraints (EU and national regulations whose non-compliance is penalised) and persuasion (through experts’ recommendations and policies adopted by decision-makers, including their promotion).

Although the implementation of measures proposed by “Farm to Fork” Strategy continues as planned at EU level, the global, regional and national evolutions in the last two years have challenged the decision-makers’ determination (at national level in particular) to support such sustainable objectives on the long term, especially in the context of the overlap of the health crisis (the COVID-19 pandemic) with the climate crisis (generating extreme weather phenomena) and the geo-strategic crisis (the Russo-Ukrainian conflict). The impact of Russian aggression against Ukraine on global food security could be kept within manageable limits, according to OECD recommendation, by focusing efforts on providing logistic support to Ukraine to enable agricultural exports (in the short term) and by measures to increase supply or reduce demand of agricultural products (in the medium term), in the context of an international food and fertiliser trade that will remain open, to allow for necessary trade adjustments and to prevent the exacerbation of global food insecurity by the Russo-Ukrainian war.

The “Farm to Fork” Strategy, through the involvement of actors from the entire food chain (farmers, processors, traders, consumers), represents an opportunity for Romanian decision-makers and for all stakeholders interested in defining policy objectives for the food system (and its sustainability). The National Strategic Plan 2023–2027, although a complex planning exercise, cannot cover all sectors targeted by

the strategy, just as the consultations that took place during the preparation of NSP 2023–2027 could not include all stakeholders. Therefore, it remains important to use tools such as regulatory impact assessment (MARD has some experience in this), to reduce the differences between public perception and scientific evidence by building a widely shared understanding of the facts. The resources of the agro-processing sector could be also better mobilised for a synergic action, through a ten-year strategy (following the *Food Wise 2025* model, developed in Ireland, for example). Until then MARD should continue to identify solutions to the most pressing problems of the agri-food sector, such as facilitating the sale of agricultural products (of small producers in particular), through short supply chains.

4.3. FOOD SECURITY FINANCING

The finance demand in the agricultural sector is determined by the need for investments for production modernisation (through the purchase of agricultural machinery and equipment, irrigation equipment), land investments (vineyards, orchards, greenhouses) and working capital (for the purchase of inputs, in particular). In the food sector, this is determined by the need for enterprise modernisation (through investments in machinery and equipment, as well as in sorting, calibration and packaging facilities) and development of new products (to attract new customers or enter new markets). Taking into consideration the unsatisfied finance demand, both for the agricultural sector and for food industry, the recommendations for financing improvement target the finance sources from the last 30 years, namely: EU funds, government funds and other financial sources attracted through financial-banking institutions. These add to own resources (foreign investments and/or local investors).

Financing agriculture and food industry from EU funds, based on eligibility criteria and transparent procedures, started as early as the 2000–2006 financial framework, has attenuated the shock of Romania's accession to the EU in the food sector. Romania allocated significant amounts for the measures: M3.1 "Investments in agricultural holdings", M1.1 "Improvement of processing and marketing of agricultural and fishery products" and M2.1 "Development and improvement of rural infrastructure". The allocation for these measures was approximately 17%, 25% and 45% respectively of total planned resources. All three measures proved a high spending effectiveness, above the 89% average of the Financing Plan of SAPARD Programme (91% of financial allocation for M.3.1, 92% for M.1.1 and 90% for M.2.1).

Taking into consideration the important agricultural potential, the following measures were financed in the financial framework 2007–2013: M121 "Modernisation of agricultural holdings" (1.5 billion EUR), M123 "Adding value to agricultural and forestry products" (1,8 billion EUR) and M141 "Supporting semi-subsistence agricultural holdings" (359 million EUR). M121 and M123 represented almost 70% of Axis 1 allocations and 30% of total programme allocations, respectively.

In the period 2014–2020, these directions continued, with two novelty elements: i) production and processing in the fruit sector had distinct financial allocations and ii) to facilitate the financing of investments, a financial lending instrument was introduced, with portfolio risk-sharing, financed from the funds allocated through NRDP. The sub-measures with relevant allocations for food security were the following: SM.4.1 “Investments in agricultural holdings” – 1602 million EUR, SM. 4.1a “Investments in fruit-growing holdings” – 419 million EUR, SM. 4.2 “Investments for processing or marketing of agricultural products” – 527 million EUR, SM. 4.2 “State aid scheme GBER” – 95 million EUR, SM. 4.2a “Investments in processing/marketing products in the fruit-growing sector” – 45 million EUR.

Measure 10 “Agro-environment and climate” and Measure 14 “Animal Welfare” were allocated about 1 billion EUR each, and Measure 11 “Organic farming” was allocated 376 million EUR. These three measures together totalled more than 20% of the total budget allocated to agriculture and food industry. Given that the EU is placing increasing emphasis on the impact of agriculture and food industry on climate and environment, a general allocation in this regard has been encouraging. Consumer standards are increasingly higher in terms of product quality, thereby understanding the need to ensure minimum sanitary-veterinary and food safety standards.

Unlike previous rural development programming documents (of NRDP type), the current CAP National Strategic Plan (SP 2023–2027) includes all interventions financed from EU funds, i.e. (decoupled and coupled) direct payments and sectoral interventions (e.g. fruit and vegetables), funded from EAGF, as well as the rural development interventions (mainly investments), funded from EAFRD, and where appropriate, even interventions funded from national budget (e.g. transitional national aid).

Table 6

Allocations for the launch of funding application submission sessions in 2023 within Pillar II from CAP Strategic Plan 2023–2027

No	Code and Name of intervention	Allocation for 2023
1	RD-15 Investments in orchards	151,383,527
2	RD-20 Investments in the livestock sector	224,610,728
3	RD-22 Investments in the conditioning, storage and processing of agricultural and fruit products	210,300,000
4	RD-25 Modernisation of the irrigation infrastructure	400,000,000
5	RD-26 Set-up of irrigation systems	102,421,176
6	RD-27 Creation/modernisation of agricultural access infrastructure	100,000,000
7	RD-28 Creation/modernisation of the basic road infrastructure in rural areas	200,988,235
8	RD-30 Support for setting up of young farmers	250,691,764
9	RD-36 LEADER – Community-led local development	500,000,000
10	RD-37 Knowledge transfer	1,800,000

Source: Calendar published on AFIR site, 27th October, 2023.

According to the Estimated Calendar for the launch of the sessions for submitting funding applications related to interventions within Pillar CAP SP 2023–2027 in the year 2023, the importance given to interventions with positive impact on food security is worth noting.

In the SBA (“Small Business Act”)¹ factsheets, the European Commission measures each country’s performance in terms of SMEs’ access to finance, as compared to the EU average. In these factsheets, SMEs’ access to finance is one of the ten monitored areas. It includes the following indicators: venture capital investments, solidity of legal rights, quality of information on crediting, total number of days until receiving funding, bad debt losses, costs of credit for small loans versus large loans, bank loan applications that have been refused and loan offers whose terms have been deemed unacceptable, access to public financial support, including guarantees, bank willingness to lend, equity financing available to new and emerging businesses, financing provided by professional angel investors to new and expanding businesses, financing provided by private lenders (crowdfunding). The 2016 figures allow grouping the EU countries into three categories, depending on the policy measures aimed at improving SMEs’ access to finance: a) broadly, around the EU average: Luxemburg, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Hungary, Ireland, Lithuania, Romania, Slovakia and Slovenia; b) above the EU average: Belgium, Estonia, Finland, Latvia, Sweden and the United Kingdom; c) under the EU average: Austria, Cyprus, Greece, Italy, the Netherlands, Poland, Portugal and Spain.

In the last 20 years, Romania’s agriculture and food industry benefited from EAGF and EAFRD funds, but these were not sufficient for restructuring and consolidation of these sectors to a greater extent. Most funding sources included the public co-financing obligation (20%, then 30%). The state aid schemes, as well as the financial instruments (guarantee, credit funds), co-financed from public and/or private resources attracted, are added to the previous sources.

According to the results of a survey conducted by the European Commission and the Central European Bank in 2016 (EC, 2017), the most important external funding sources relevant for SMEs are the following: credit lines; bank loans; leasing, financial credits and equity financing. There were 34 banks and 5 financial institutions in 2019, but the financial offer for agriculture was dominated by only a few banks (CEC Bank, Transilvania Bank, Raiffeisen Bank).

According to a recent study (Fi-compas, 2020), the unsatisfied demand for the Romanian agricultural sector was estimated at 3 billion EUR and targeted SMEs in particular, since Romania’s large farmers have access to bank financial instruments. Banks finance large farmers while non-banking financial institutions provide their services to small farmers.

¹ European Commission, European Semester – thematic factsheet access of small and medium-sized enterprises to finance, 2017, see: https://ec.europa.eu/info/sites/default/files/file_import/european-semester_thematic-factsheet_small-medium-enterprises-access-finance_ro.pdf

In turn, according to the same study (Fi-compas, 2020), the unsatisfied demand for the processing/food sector amounted to 594.6 million EUR, taking into consideration the following constraints: a large number of processing units are discouraged from accessing credits; banks are financing the food sector using their own standard business offer; financial institutions do not have the necessary know-how to evaluate the smallest processors; non-banking financial institutions focus only on the urban market.

Under these conditions, it is recommended that banking units standardise their offer by several types of investments and provide real alternatives for micro-enterprises and SMEs that need finance in the food processing sector. On the other hand, the recommendations for farmers and processors were to increase the efficiency of investments by the harmonious combination of short- and medium-term objectives and use of all types of credits so that they can quickly implement the proposed investments (e.g. credit line/bridge loan, combined with medium/long term credit).

5. CONCLUSIONS

The agrarian structure can influence food security. In Romania, there are 2862 thousand agricultural holdings without legal personality (small farms) that operate 7817 thousand ha, and 25 thousand agricultural holdings with legal personality (large farms) that operate 4946 thousand ha (data extracted from Press Release no. 74/March 24, 2022, NIS). The presence of a large number of small farms can be a disturbing factor for agricultural supply stability, as there is a higher probability of increasing the volatility of agricultural production (small farms are less endowed in resources and apply less productive technologies). At the same time, these farms can have an important contribution to the food security of the rural population, representing a safety net in conditions of economic crisis.

Current crises have had a major impact: climate crisis (climate change), health crisis generated by the COVID-19 pandemic, regional geo-strategic crisis (Russo-Ukrainian conflict since February 2022, and the situation in Israel since November 2023). FAO also identified a number of new risks in terms of global food security: risks related to trade, high volatility of agri-food prices, logistic risks, production risks, ecological risks, risks related to energy sources (electricity, natural gas), risks related to foreign exchange rate, debt ratio, etc. These risks are exacerbated in Romania by the existence of regional disparities.

The climate crisis generates extreme weather phenomena (prolonged drought, repeated heat waves and flooding). The factor of maximum influence on the agricultural sector, as well as on the environmental policies, is represented by climate change and its impact on production factors. All EU member states, including Romania, must be able to cope with climate change and be fully adapted to the inevitable climate change effects.

As regards climate change and the goal of achieving a climate-resilient development, a report by *The Intergovernmental Panel on Climate Change* (IPPC, 2022) unequivocally acknowledge that climate change has already disrupted human and natural systems, and therefore the options and societal actions implemented over the next decade will determine the extent to which medium and long-term evolutions will ensure more or less climate-resilient development. Prospects for resilient development are considered to be increasingly limited in the absence of cutting down fast the current greenhouse gas emissions, particularly if the global warming of 1.5°C is exceeded in the short term. Given the temperatures recorded in October and November 2023, the 1.5°C warming might be exceeded in a very short term.

These prospects are limited by past evolution, emissions and climate change and are favoured by an inclusive governance, by adequate human and technological resources, information and finance. Specifically, drastically reducing the use of fossil fuels, increasing the forested areas and decreasing meat consumption are among the actions needed to stop global warming.

The EU has set itself the target of becoming climate neutral by 2050. The core objective is the net reduction of greenhouse gas emissions (emissions after deduction of absorptions). According to current legislation, by the year 2030, their level should decrease by 55% compared to 1990.

Due to the high costs implied by certain reduction methods and / or CO₂ sequestration systems, natural methods are preferable. So far, no artificial absorber has been able to remove enough carbon dioxide to combat global warming. The natural carbon sequestration systems are soil, forests and oceans. According to estimates, these natural absorbers sequester between 9.5 and 11 Gt CO₂ per an, while the global CO₂ emissions in 2019 reached 38 Gt. Different methods based on biological, physical and chemical processes have been proposed.

Regional disparities should not be neglected when trying to find solutions to climate change. In this sense, in Romania, there is only one system in place that can be used for reducing disparities – the agricultural insurance system. But the agricultural insurance system no longer covers all adverse situations that may result in harvest or animal losses. There are areas with recurrent climatic crises, year after year. When these natural disasters enter the register of “normality”, it is the farmers who must take action and find a solution.

- In the crop production sector, many growers of vegetables and horticultural products switched to growing crops in a controlled environment (greenhouses and solariums) to mitigate the frequency of air temperature change (e.g., Târgoviște and Galați area).
- In the case of prolonged drought, such as on the sandy soils in Oltenia, where the desertification phenomenon has already appeared, an appropriate irrigation system is needed, or the creation of drought-resistant varieties. Among the varieties improved in recent years by the researchers from

Dăbuleni Station, the sweet potatoes, peanuts, kiwi, pawpaw (*Asimina triloba*), olive, kaki, Ionicera, chokeberries are worth mentioning.

- The recurrent heat waves, which are most often followed by heavy and cold rains, even by hail rains, have determined the owners of fruit plantations (in the Southern Subcarpathians) to establish plantations equipped with a complete system: localised irrigation system, support system, anti-hail net system and/ or rain cover tarpaulins.

The health crisis (the COVID-19 pandemic) has demonstrated the need to simplify financing and expand digitalisation in the agricultural agencies such as APIA, AFIR, ANIF, ANSVSA, ANZ, ANF and develop a common database with information on farms and farmers, which can be updated in real time. A document signed by 13 member states, also by Romania, asked the Commission for temporary emergency support measures of exceptional nature, simplified procedures for amending rural development programmes, accepting exceptions to eligibility and financial conditions, shortening the duration of operations and completing partial projects as a result of unforeseen circumstances, caused by the current crisis situation. In the case of Romania, 182.5 million EUR were allocated (1.52% of the total budget) and applications for support were submitted by 122,986 active farmers, the entire allocated amount being requested.

The regional geo-strategic crisis (Russo-Ukrainian conflict) has impacted on agricultural markets and, more broadly, on global food security, and has led to disruptions in the exports of cereals and oilseeds from Ukraine (partially resumed after negotiations to create safe shipping corridors across the Black Sea). The total loss of Ukraine's capacity to export, together with a 50% reduction in Russia's wheat exports, could lead to a 34% increase of international wheat prices in the marketing year 2022–2023. The new conflict in Israel may lead to the exacerbation of food, energy and natural gas crisis.

The EU reduced natural gas consumption by 20% in the period August–November 2022, as compared to the last five years' average (2017–2021). Romania saved 35%. According to Eurostat data, in 18 out of 27 member states, natural gas consumption was down by more than 15% throughout the four months, i.e. the minimum percentage stipulated in the REPowerEU plan, by which the EU bloc aims to end dependence on fossil fuels from Russia.

In this spiral of crises, Romania has several strengths compared to other member states: domestic market; limited energy dependence due to the existence of local coal, crude oil and natural gas deposits; large-scale generation of renewable electricity; accessibility for non-EU workers; information and communication technological infrastructure in full process of expansion and modernisation, including 5G mobile networks.

From another perspective, despite the fact that this may be a disruptive factor for the stability of agricultural supply, small farms, which often practice a traditional farming system and usually use fewer chemical inputs, have a greater

opportunity to shift to organic farming, produce cleaner foods and contribute to environmental protection. Like in agriculture, where small farms must also have access to financing, in the agro-processing industry, microenterprises and small enterprises must be stimulated, especially if they produce niche products, traditional and organic products, with protected denomination, etc.

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