Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 25, Issue 3, 2025
PRINT ISSN 2284-7995, E-ISSN 2285-3952

FOOD SYSTEM SUSTAINABILITY AND SAFETY IN ROMANIA: BETWEEN CONSUMER EXPECTATIONS AND STRATEGIC CHALLENGES

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Abstract

This paper analyses a series of relevant aspects regarding food security as an integral part of sustainable development, with a particular focus on Romania in 2024, as well as the factors influencing food security both nationally and globally. All these elements are addressed to identify future steps, perspectives, and specific challenges for regional and global food security in the coming years. Currently, Romania faces a range of emerging risks, while global issues increasingly impact sustainable development and food security. It is crucial to approach food security as an essential aspect of social stability, capable of preventing significant imbalances within communities. Sustainable development, in this context, involves finding a balance between the current needs of the region and the preservation of resources for future generations. This process includes short- and long-term objectives, addressing economic and environmental challenges, and leveraging local agri-food potential, all of which are closely interconnected. The methodology employed in this study focuses on a SWOT analysis, examining the strengths, weaknesses, opportunities, and threats related to food and nutritional security in Romania. This analysis is grounded in the four essential dimensions of food security: availability, stability, economic access, and utilization. Additionally, the study examined the Global Food Security Index (GFSI) in Europe, reflecting levels of food access and the population's ability to secure adequate, safe, and nutritious food. The aim was to identify the most precise and statistically valid forecasting method.

Key words: *food security, food sustainability, availability, stability, consumption*

INTRODUCTION

In recent years, an increasing number of people have begun to focus on food security, particularly on the quality of products consumed daily, from the perspective of food safety. It must be acknowledged that, in many cases, there is confusion between the two concepts, food sustainability and food safety, which are often considered synonymous. However, food sustainability is just one of the key components of food security. Essentially, food sustainability encompasses all indicators related to how food reaches the population [1], while food security focuses more on aspects concerning product quality, hygiene, and safety. With the domestic market increasingly exposed to the dynamics of international food chains and recent inflationary pressures, Romanian consumers have become more aware of the importance of quality, traceability, and the origin of agri-food products. Consumption choices are influenced not only by price, but also by perceptions of health risks, environmental impact, and support for the local economy. Thus, food security is now perceived as a right, not just a necessity, and agri-food systems must be rethought to meet these multiple expectations [7]. Based on this definition provided by the FAO, four dimensions of food security can be identified: food availability, economic and physical access to food, food utilization, and stability (vulnerability and shocks) over time (FAO) [16]. It is true that without ensuring a minimum level of product quality, discussions

about the economic aspect of ensuring access to food become futile. Food security, on the other hand, revolves around generating food production at a productivity level sufficient to sustain the human population.

Food sustainability, food security, and food safety are three critical concepts related to the production, distribution, and consumption of food. In summary, food sustainability emphasizes the long-term environmental impact of food production, food security underlines access to food for all, and food safety addresses protecting consumers from foodborne illnesses. Together, these concepts are essential for creating a healthy, equitable, and resilient food system capable of meeting the needs of present and future generations [3]. Food safety and security are two complementary elements of a sustainable future. This paper argues that, in the long term, the goals of food safety and security must be aligned to achieve sustainability, and trade-offs between these three objectives must be carefully managed and evidence based.

Exploring the similarities and differences between the three terms—food sustainability, food security, and food safety—we observe that food sustainability focuses on the environmental impact of food production, promoting sustainable agriculture, reducing waste, and conserving natural resources. It encompasses practices that are environmentally responsible, socially equitable, and economically viable. On the other hand, food security seeks to ensure that all individuals have access to sufficient, safe, and nutritious food to meet their dietary needs and lead a healthy life. It addresses issues of hunger, malnutrition, and poverty, involving efforts to improve food availability, access, utilization, and stability. Finally, food safety deals with preventing contamination and foodborne illnesses throughout the food supply chain. It involves maintaining strict standards, proper handling and storage practices, and regular inspections to protect consumers from harmful substances and ensure safe food consumption. The idea of sustainable farming is based on increasing production alongside safe and consistent yields with minimal environmental impact while ensuring the population's food security [3]. Sustainable food production fundamentally relies on the availability of fertile land, water, nutrients, and a suitable climate to produce enough high-quality food. Unfortunately, in recent years, a trend has emerged, both among the civilian population and Romanian institutions, to underestimate the importance of other factors contributing to food security. This situation has arisen from the belief that a normal level of food sustainability [2] has long been achieved and cannot decrease once reached. Consequently, all efforts are directed toward increasing the quality of consumed products.

In Romania, there have been constant concerns regarding food security, including during the Covid-19 pandemic, due to worries about increasing trade deficits in certain product categories, under the pressure of rising consumption of high-nutritional-value products (animal-based products, vegetables, fruits, fish), against the backdrop of policies to increase household incomes. Today, an agri-food product must not only guarantee safety for consumption but also have a minimal ecological footprint; it must meet the producer's expectations and contribute to social and human development [4]. Since agricultural production is responsible for food security, safety, and environmental protection, the consumption of organic food based on ecological behaviours can enhance the commercial opportunities of organic agriculture for production, processing, and trade, bringing significant benefits to society [5]. In this context, the paper analyses a series of relevant aspects regarding food security as an integral part of sustainable development, with a particular focus on Romania in 2024, as well as the factors influencing food security both nationally. The SWOT analysis emphasizes the strengths, weaknesses, opportunities, and threats related to food and nutritional security being grounded in its four essential dimensions: availability, stability, economic access, and utilization.

MATERIALS AND METHODS

The study relies on data gathered manually from the Eurostat European Statistics Institute

[14], the National Institute of Statistics [20], World Bank [22, 23, 24], FAO [15, 16], European Commission [12, 13] and reports published on indicators related to agricultural sustainability, food security, and environmental sustainability over six years (2016-2024). The methodology employed includes a SWOT analysis of food security and nutrition in Romania, highlighting the vulnerabilities that impact the population. Among the most significant deficiencies is the lack of self-sufficiency in the production of certain staple foods, such as meat, fruits, sugar, and fish, where systematic deficits are compensated through imports. This aspect indicates a significant economic dependency on external markets. The paper provides a detailed overview of the strengths, weaknesses, opportunities, and threats associated with Romania's food security, considering key factors influencing the availability, accessibility, and quality of food. The SWOT analysis highlights both competitive advantages, such as the extensive and fertile agricultural land, and major challenges, such as dependency on imports for essential products and vulnerability to climate change. By identifying development opportunities, such as accessing European funds for modernization, and potential threats, such as international market fluctuations, the study proposes solutions to enhance the resilience of the agri-food sector and ensure sustainable food security [13].

RESULTS AND DISCUSSIONS

The cultivated area and production of main crops play a pivotal role in ensuring food security. In Romania, leveraging fertile agricultural land and improving crop productivity contribute to stable food supplies and economic resilience. Policymakers must prioritize sustainable agricultural practices and crop diversification to address future challenges and ensure long-term food security. Sustainable agricultural practices play a vital role in ensuring a secure and consistent food supply, contributing to global food security and safeguarding food safety. [21] These practices aim not only to produce sufficient food to meet the needs of a growing global population but also to guarantee its quality and safety [18].

Table 1. The cultivated area and production of main crops

No.	Crops	Cultivated area		Total production		Differences 2023 compared to 2022 (±)	
		thousand ha	thousand ha	thousand tons	thousand tons	thousand ha	thousand tons
		2022	2023	2022	2023	2022	2023
1	Grains for grains	5,184	5,238	18,861	20,571	54	1,710
3	Wheat	2,169	2,208	8,684	9,635	39	951
4	Barley and two-row barley	426	501	1,707	2,001	75	294
5	Oats	78	76	172	155	-2	-17
6	Corn for grains	2,431	2,373	8,037	8,522	-58	485
7	Leguminous crops for grains	76	102	119	164	26	45
8	Oilseed crops, including:	1,701	1,859	3,584	4,122	158	538
10	Sunflower	1,093	1,089	2,107	2,028	-4	-79
11	Soybeans	136	141	244	300	5	56
12	Rapeseed	469	625	1,230	1,787	156	557
13	Potatoes	81	77	1,346	1,085	-4	-261
14	Vegetables	178	179	2,426	2,466	1	40

Sources: National Institute of Statistics (INS) 2022-2023 [20], Eurostat 2022-2023 [14].

The table provides a comparative analysis of cultivated areas and total production of major crops in Romania for 2022 and 2023, highlighting changes in both the areas cultivated and the resulting yields. These differences are crucial for understanding agricultural trends and identifying factors influencing crop production.

- The total cultivated area for cereals increased by 54 thousand ha in 2023, resulting in a

significant rise in total production by 1,710 thousand tons. This trend indicates improved agricultural practices, favourable climatic conditions, or increased investments in cereal production.

- Wheat cultivation expanded by 39 thousand ha, leading to a production increase of 951 thousand tons. This suggests enhanced productivity, possibly due to improved seed varieties, better soil management, or favourable market demand.
- Barley exhibited a notable expansion in the cultivated area (75 thousand ha), accompanied by a production growth of 294 thousand tons. This increase reflects growing demand and the crop's adaptability to diverse climatic conditions.
- Oats showed a slight reduction in both cultivated area (-2 thousand ha) and production (-17 thousand tons). This decline may be attributed to shifting farmer preferences toward more profitable crops or less favourable market conditions.
- Despite a reduction in the cultivated area (-58 thousand ha), corn production increased by 485 thousand tons, indicating significant yield improvements. This could result from advancements in hybrid corn varieties, better irrigation, or optimal planting conditions.
- The cultivated area for legumes expanded by 26 thousand ha, resulting in a production increase of 45 thousand tons. This growth highlights the increasing importance of legumes in crop rotations due to their nitrogen-fixing properties and their role in enhancing soil fertility.
- The total area for oilseeds increased by 158 thousand ha, with a corresponding production rise of 538 thousand tons. This growth underscores the economic value of oilseeds in both local and international markets.
- Sunflower: A slight decrease in cultivated area (4 thousand ha) and production (-79 thousand tons) may indicate challenges in sunflower cultivation, such as adverse weather conditions or pests.
- Soybeans: Both area and production increased by 5 thousand ha and 56 thousand tons, respectively, reflecting growing interest in soybeans due to their high protein content and market demand.
- Rapeseed: Rapeseed showed the most significant expansion, with an increase of 156 thousand ha and 557 thousand tons in production. This highlights rapeseed's growing importance as a biofuel feedstock and an oil crop.
- Both the cultivated area (-4 thousand ha) and production (-261 thousand tons) declined, likely due to reduced profitability or competition from imported potatoes. This trend raises concerns about domestic potato self-sufficiency.
- Vegetables showed a marginal increase in both cultivated area (1 thousand ha) and production (40 thousand tons). This modest growth suggests stability in vegetable demand and supply, supported by local consumption trends.
- Expanding crops: Wheat, barley, legumes, and rapeseed are experiencing notable growth, likely due to favourable economic and environmental factors.
- Declining crops: Oats, potatoes, and sunflower have faced declines, possibly due to market shifts, competition, or environmental stressors.
- Yield improvements: Increases in production despite reductions in cultivated areas for certain crops (e.g., corn) highlight advancements in agricultural technologies and farming practices.
- Sustainability implications: The expansion of oilseed and cereal crops reflects a potential shift toward crops with higher market value and export potential, but this must be balanced with environmental sustainability and soil health considerations [8]. Gentilini (2002) highlights that food aid should not be perceived only as an emergency intervention, but as a strategic tool for development, capable of contributing to poverty reduction and strengthening food security [17].

Food security, defined by the availability, accessibility, and utilization of safe and nutritious food, is a critical component of Romania’s development strategy. In a possible scenario of a global food security crisis, characterized by sharp increases in agricultural prices and restricted access to basic goods, the balance of power in international trade could be reversed: exporters become the dominant

actors, capable of influencing the flow of essential food supplies. According to DG Agri (2020), the Member States factsheets provide relevant insights into European agricultural policies. [9]. This imbalance disproportionately affects developing countries, where poverty levels intensify, but also developed nations, where vulnerable groups – including the middle class – directly feel the impact [6]. The annual consumption of agri-food products per capita is a key indicator that reflects not only the food supply but also consumer preferences, economic conditions, and public health trends. This study examines the evolution of this indicator and its implications for national food security (Table 2).

Table 2. Evolution of annual consumption of agri-food products/per capita in Romania

No.	Product	2014	2023	2024	Slope (m)	Intercept (b)	Calculated Y (2025)	Calculated Y (2026)
1	Cereals	172.8	199.8	213.7	4.54	-8,966.98	222.66	231.06
2	Potatoes	59.4	73.5	97.7	3.98	-7,965.48	100.77	98
3	Sugar	24.7	26.6	24.5	0.03	-27.61	25.42	33.17
4	Vegetable oil	12.6	10	13	-0.02	59.94	11.72	19.42
5	Vegetables	124.9	140	147.7	2.53	-4,972.46	152.72	153.32
6	Fruit	56.7	55.8	45.4	-1.1	2,268.73	46.05	40.13
7	Wine	20.6	26.1	27	0.74	-1,470.45	29.01	28.79
8	Meat	73.8	50.5	54.3	-2.41	4,929.17	45.06	46.51
9	Milk	99.4	195.3	215	13.29	-26,668.4	249.66	257.16
10	Fish and seafood	5.6	2.3	3.2	-0.31	623.82	1.86	-4.24

Source: Own calculations based on National Institute of Statistics (INS) 2014-2024 [20].

In 2026, cereal consumption is estimated to reach 231.06 kg per capita, maintaining a steady upward trend (m=4.54). This growth can be attributed to a consistent demand for staple products and the diversification of cereal-derived products, supported by improvements in the agricultural sector.

For potatoes, consumption is projected to reach 98 kg per capita, showing a slight decline compared to 2025. This indicates market stabilization after significant growth between 2014 and 2024 (m=3.98). This trend reflects market maturity and diversification of carbohydrate sources in the population's diet.

Sugar consumption is estimated at 33.17 kg per capita in 2026, showing moderate growth (m=0.03) compared to previous years. This increase reflects steady demand but raises public health concerns, given the potential impact on obesity and metabolic disorders.

For vegetable oil, the projected consumption of 19.42 kg per capita represents a recovery following earlier declines (m=-0.02). This increase indicates market adaptation to consumer preferences for healthier fats and the diversification of available products.

Vegetable consumption continues to grow, with an estimated 153.32 kg per capita in 2026 (m=2.53). This growth can be associated with increased awareness of the importance of vegetables in daily diets and greater market availability.

In contrast, fruit consumption shows a continued decline, reaching 40.13 kg per capita in 2026 (m=-1.10). This decrease could be explained by high costs, low availability, or shifting consumer preferences toward other food categories. Wine consumption remains relatively stable, with an estimated 28.79 litres per capita (m=0.74). This stability reflects a strong tradition of wine consumption and producers' ability to adapt to market demands.

Meat consumption is estimated at 46.51 kg per capita (m=-2.41), indicating a slight recovery after recent declines. This growth may be driven by higher availability and household income recovery but remains below earlier levels. Milk and dairy products show accelerated growth, with projected consumption reaching 257.16 litres per capita in 2026 (m=13.29). This trend reflects increased preferences for dairy products and

effective promotion campaigns highlighting their benefits. Fish and seafood consumption is estimated to decline drastically to a negative value of -4.24 kg per capita (m=-0.31). While this value is unrealistic in practice, it highlights a clear downward trend due to high prices, limited access, and reduced interest in these products.

The paper presents a comprehensive evaluation based on a SWOT analysis of Romania's food security and safety, providing a structured framework to examine the strengths, weaknesses, opportunities, and threats that influence the national food security and safety landscape. By delving into these dimensions, the study aims to offer a clearer understanding of Romania's position in ensuring consistent access to safe and nutritious food for its population, in alignment with domestic needs and European Union standards. According to the European Commission (2018), the Common Agricultural Policy for 2020 was designed to respond to future challenges related to food security, sustainable management of natural resources and balanced development of rural territories [12].

Table 3. The Internal Factor Evaluation (IFE) Matrix-2024

No.	Internal factors	Weight	Rating	Total Weight
	Strengths			
1	Existence of local agrifood market networks	0.09	4	0.36
2	High production capacity and fertile agricultural land suitable for various crops and livestock farming	0.08	4	0.32
3	Favourable climatic conditions for agricultural activities in certain regions	0.07	4	0.28
4	Longstanding tradition and expertise in agricultural practices	0.06	3	0.18
5	Experienced agricultural workforce	0.06	3	0.18
6	Improved food safety standards due to EU regulations	0.06	4	0.24
7	Access to European funds for modernization and rural development	0.08	4	0.32
8	Diversified production capacity for crops and livestock	0.05	3	0.15
	Subtotal	0.55		1.67
	Weaknesses			
1	Dependence on imports for staple foods such as meat, sugar, and fish	0.08	4	0.32
2	Systematic deficits in certain food categories. impacting self-sufficiency	0.06	3	0.18
3	Instability of domestic agricultural production due to weather and technological conditions	0.08	4	0.32
4	Low-income levels, particularly in rural areas	0.07	3	0.21
5	Significant regional disparities in economic development	0,05	3	0,15
6	Food consumption heavily reliant on inexpensive, calorie dense foods such as cereals and potatoes	0.06	3	0.18
7	Insufficient intake of animal protein and essential nutrients	0.05	3	
	Subtotal	0.45		1.36
	Total	1,0000		3.03

Source: Own calculations based on National Institute of Statistics (INS) 2022-2024 [20].

Strengths:

1. Existence of local agri-food market networks:

Local agri-food markets play an essential role in reducing the distribution chain, minimizing food waste, shortening storage times, and maintaining food freshness. These markets strengthen the local economy by providing direct access for local producers to consumers. Additionally, they support biodiversity by promoting native products, including local varieties and breeds.

Impact on food security: Reducing dependence on imports and ensuring access to fresh and safe food for the population.

2. High production capacity and fertile agricultural land:

Romania boasts over 9 million hectares of arable land, offering a competitive advantage for producing cereals, legumes, and industrial crops.

The soil fertility and diversity of pedoclimatic conditions allow crop adaptation to various regions.

Impact on food security: Increased domestic production reduces supply vulnerabilities and

strengthens exports, supporting both food and economic security.

3. Favourable climatic conditions for agricultural activities in certain regions:

Romania's temperate-continental climate supports favourable vegetation cycles for crops such as wheat, corn, sunflower, and vineyards. Moreover, available water resources for irrigation in lowland areas provide an additional advantage.

Impact on food security: Leveraging these favourable climatic conditions ensures stable agricultural production and consistent supply for domestic and international markets.

4. Long-standing tradition and expertise in agricultural practices:

Accumulated experience and traditional farming methods contribute to maintaining sustainable practices and adapting to local conditions. Traditions also encourage the use of local resources and cultivation of traditional varieties.

Impact on food security: Traditions can be integrated with modern technologies to ensure sustainable and efficient agriculture.

5. Experienced agricultural workforce:

Romania's rural population represents a vital resource for the agricultural sector. While mechanization is increasing, farmers' experience in manual labour and traditional techniques remains an advantage.

Impact on food security: Maintaining traditional agriculture and adopting new technologies contribute to increased efficiency and productivity.

6. Improved food safety standards due to EU regulations:

EU integration required Romania to adopt strict food safety standards, leading to enhanced control over production and distribution chains.

Impact on food security: Adhering to these standards improves product quality and protects public health.

7. Access to European funds for modernization and rural development:

EU funds are utilized for modernizing agricultural equipment, building new infrastructure (irrigation, storage, rural roads), and supporting farmers transitioning to sustainable practices.

Impact on food security: Increased production capacity and diversification of crops reduce import dependency and strengthen the agricultural sector's resilience.

Recommendation: Creating an efficient mechanism for accessing and implementing funds can maximize the benefits.

Weaknesses:

1. Dependence on imports for staple foods (Weight: 0.08, Rating: 4, Total Weight: 0.32):

Romania relies on imports for essential products like meat, sugar, and fish, which increases food security vulnerabilities to international price fluctuations.

Recommendation: Stimulating domestic production for these food categories is crucial to reduce dependency.

2. Agricultural production instability due to weather conditions (Weight: 0.08, Rating: 4, Total Weight: 0.32):

Climate change and the lack of modern irrigation infrastructure negatively affect the stability of agricultural production.

3. Low-income levels, especially in rural areas (Weight: 0.07, Rating: 3, Total Weight: 0.21):

At the same time, most forward-looking analyses highlight the complex and often contradictory global dynamics expected to influence food security in the coming years. On one hand, the rapid economic growth observed in emerging markets is projected to lead to a significant increase in per capita food consumption. This growth is accompanied by a major shift in dietary patterns, moving from diets traditionally dominated by cereals and other starchy foods to those that include a higher proportion of animal-based products, fruits, vegetables, and processed foods.

Low incomes limit access to diverse and nutritious foods [19].

Recommendation: Social policies to support vulnerable families, alongside educational programs on nutrition, are necessary.

This paper analyses the influence of external factors on food security in Romania, emphasizing both opportunities and threats that shape the country's ability to ensure a stable and safe food supply. By evaluating key factors and their weighted impact, strategic priorities and actionable directions are identified to

strengthen food security and mitigate vulnerabilities.

Key Opportunities:

1. High-quality agri-food products on the market (0.28): Reflects adherence to EU food safety and quality standards, increasing consumer trust and reducing import dependency. Promoting these products internationally could enhance economic growth.
2. Households offering high-quality food at low prices (0.21): Rural households provide fresh, affordable food, crucial for vulnerable communities. Supporting these households through subsidies and market access could boost local development.
3. Growing interest in organic products (0.18): Rising demand for eco-friendly food highlights a shift toward sustainable consumption. Investments in organic farming and consumer education are essential.
4. Potential for sustainable agriculture (0.30): Romania's natural resources position it for sustainable farming practices, essential for food security and environmental protection. Investments in precision agriculture and climate adaptation are recommended.
5. Improved logistics and supply chains (0.40): Enhancing storage and transportation infrastructure can reduce food waste, improve access to fresh products, and stabilize food availability.

Key Threats:

1. Climate change (0.40): The most significant risk, affecting crop yields and increasing resource pressure. Solutions include developing resilient crop varieties and modern irrigation systems.
2. Economic inequalities (0.21): Low incomes in rural areas limit access to nutritious food. Social policies and subsidies are needed to support equitable access.
3. Global market fluctuations (0.15): Price volatility impacts food affordability, necessitating stronger local production capacities.
4. Geopolitical tensions (0.12): Disruptions in supply chains due to global conflicts stress the need for diversification and local production.
5. Legislative instability (0.08): Policy unpredictability hinders investment in the agri-food sector. Long-term strategies are essential for stability.

Recommendations:

- Integrated policies: Address opportunities and threats holistically to strengthen food security.
- Investments in innovation: Modern technologies, such as precision agriculture, can improve productivity and sustainability [23].
- Climate resilience: Promote sustainable practices and adaptive infrastructure to mitigate climate risks.
- Reduction of inequalities: Implement social policies to ensure equal access to food resources.
- Logistics enhancement: Improve supply chains to reduce food losses and support vulnerable communities.

Romania's food security requires a balanced approach, leveraging opportunities such as improved logistics and sustainable agriculture while addressing major threats like climate change and economic disparities. Strategic investments and policies can enhance the country's resilience and ensure long-term food security [22].

By categorizing these factors distinctly, the SWOT analysis provides a clear and actionable framework for understanding and addressing the multifaceted challenges of food security and safety in Romania.

At the same time, external opportunities, including access to EU funding and increasing demand for traceable, high-quality food products, contrast with looming threats like geopolitical instability and volatile market conditions.

Through this structured SWOT perspective, policymakers, stakeholders, and agricultural entrepreneurs are better equipped to prioritize interventions, promote sustainable food systems, and strengthen consumer trust. Ultimately, aligning strategic development with the principles of sustainability, innovation, and equity is essential for securing Romania's food future in an increasingly complex global context.

Table 4. The Internal Factor Evaluation (IFE) Matrix-2024

No	External factors	Weight	Rating	Total Weight
Opportunities				
1	Quality food available on the agri-food market and in trade	0.07	4	0.28
2	Existence of households offering higher quality food at relatively low prices	0.07	3	0.21
3	Increasing interest in organic products and development of organic farms	0.06	3	0.18
4	High potential for sustainable agriculture	0.10	3	0.3
5	Investments in agricultural innovation	0.06	4	0.24
6	Access to European funds for modernization	0.08	4	0.32
7	Development of sustainable agricultural practices	0.06	3	0.18
8	Promotion of food education	0.05	3	0.15
9	Improvement of logistics and distribution chains	0.10	4	0.4
Subtotal		0.65		1.29
Threats				
1	Climate change	0.1	4	0.4
2	Global market fluctuations	0.05	3	0.15
3	Geopolitical tensions	0.04	3	0.12
4	Economic inequalities	0.07	3	0.21
5	Legislative instability	0.04	2	0.08
6	Food safety risks	0.05	3	0.15
	Subtotal	0.35		1.11
	Total	1.00		2.4

Source: Own calculations based on National Institute of Statistics (INS) 2022-2024 [20].

Another important indicator is Global Food Security Index (GFSI) [7], which plays a key role in analysing food security by providing a structured framework for evaluating the accessibility, availability, quality, and safety of food, as well as the sustainability of Romania's food systems in the context of global standards. Romania ranks 36th globally in food security, excelling in food standards and GDP per capita (1st place globally), while facing challenges in availability (17th place) and production sufficiency (47th place). This study evaluates Romania's performance in food security, focusing on accessibility, availability, and quality & safety, based on the Global Food Security Index (GFSI) 2024. Romania's accessibility score increased to 69.80 (+1.30 from 2023), reflecting improved affordability and economic support for food access, with notable progress in household purchasing power (GDP per capita: 102) and robust food safety standards [10].

Table 5. Determinant factors for food security

	Category of FSI	Score 2024	Score 2021	Change in 2024 versus 2023	RO place worldwide	Global score
1	Overall	72.3	69.11	+3.19	36	61.2
2	Access	69.8	67.5	+1.30	42	59.5
3	Food expenses	46.2	43.33	+2.10	72	57.8
4	Poverty rate	82.5	82.15	-0.50	31	77.5
5	GDP per capita	102	100	+2.00	1	68
6	Food standards	101	100	+1.00	1	64
7	Safety programs	73.5	69.01	+3.00	34	62.8
8	Farmer funding	68.4	65.86	+1.70	19	59.2
9	Availability	27.5	25.08	+1.40	17	18.4
10	Supply adequacy	54.5	52.06	+1.50	59	60.5
11	Sustainability	71.8	69.41	+1.80	101	88.8
12	Agri infrastructure	67.2	64.89	+1.20	23	50
13	Production sufficiency	88.5	85.6	+1.50	47	40
14	Political risk	101	100	+1.00	100	102
15	Corruption	97.2	95.59	+1.20	14	88
16	Urban capacity	75.4	72.82	+1.40	31	60.5
17	Food waste	96.5	94.5	+1.50	54	59
18	Quality & Safety	101	100	+1.00	1	84
19	Production volatility	58	56.07	-0.90	36	47
20	Nutrition standards	67.8	65.9	+1.30	30	51.5
21	Protein quality	77.5	74.7	+1.50	12	39.5

Source: Own calculations based on INSSE-Romania 2022-2024 [20].

However, challenges persist in addressing socio-economic disparities, with the poverty rate declining slightly to 82.50.

Table 5 highlights Romania's progress in terms of food security, based on 21 indicators included in the FSI (Food Security Index). Overall, Romania is recording significant

progress, with an increase of +3.19 points in the overall score and a position in 36th place worldwide, above the global average score (72.3 compared to 61.2) (Table 5). In terms of availability, the score rose to 27.50 (+1.40), driven by enhanced supply adequacy (54.50) and investments in agricultural infrastructure (67.20) and sustainability (71.80). Despite these gains, production sufficiency (88.50) remains vulnerable to climate risks and fluctuating crop yields.

Romania achieved a perfect score of 101 in quality and safety, underlining its strong adherence to food safety and nutrition standards. Improvements in nutrition standards (67.80) and protein quality (77.50) reflect diversification efforts, though production volatility (58.00) highlights the need for greater resilience.

The 2024 GFSI data underscores Romania's significant progress in strengthening food security. Improvements in accessibility, quality, and sustainability reflect effective policy measures and investments in agricultural infrastructure. However, addressing production volatility and regional disparities remains critical for ensuring long-term resilience and equitable access to safe and nutritious food for all citizens [11].

The figure effectively illustrates Romania's trajectory in food security, showcasing notable progress across various dimensions while also highlighting areas requiring further strategic focus. The overall trend suggests a positive trajectory, but ongoing challenges related to production stability and socio-economic disparities remain critical for achieving sustainable food security [15].

The chart compares Romania's performance in food security between 2021 and 2024, based on scores derived from the Global Food Security Index (GFSI) [11]. The data provides insights into the country's progress across key dimensions such as accessibility, availability, and quality & safety.

Romania's overall GFSI score increased from 69.11 in 2021 to 72.30 in 2024, indicating a strengthened food security environment driven by economic growth and improved policies.

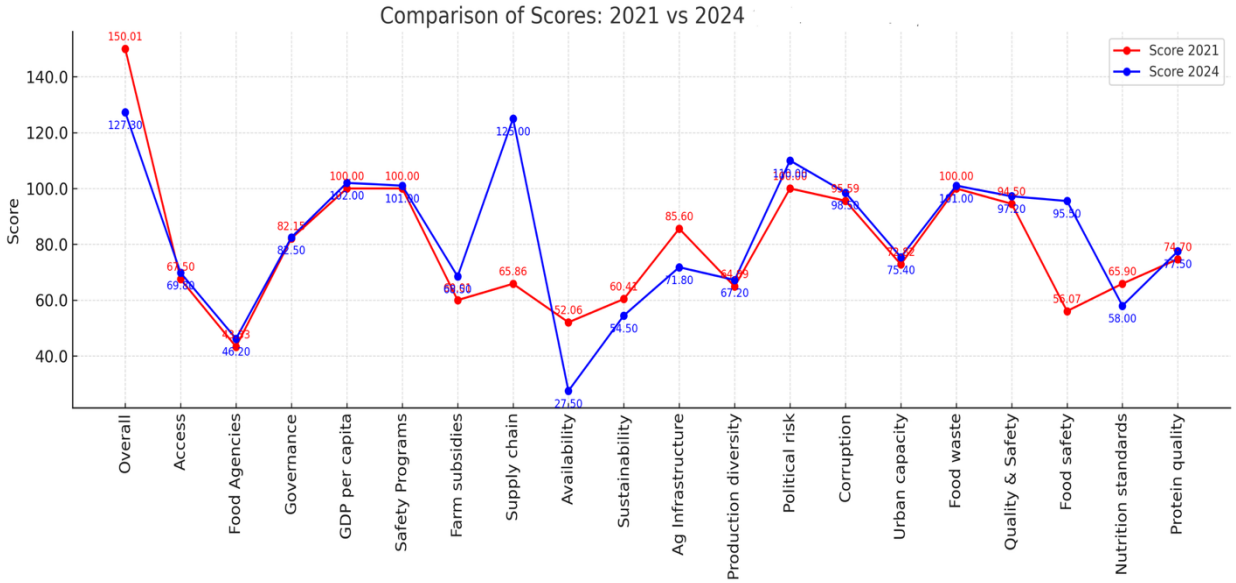

Fig. 1. Comparative analysis of Romania's food security performance in 2021 and 2024 based on GFSI dimensions
Source: Global Food Security Index (GFSI), Economist Impact – 2021 & 2024 reports

Accessibility. Scores for food access (67.5 to 69.8) and food expenses (43.33 to 46.2) reflect modest improvements in affordability, while a slight rise in GDP per capita (100 to 102) highlights increased purchasing power. However, poverty rate saw minimal change, signalling persistent socio-economic.

Quality and Safety. Romania maintained a perfect score of 101, highlighting robust food safety standards.

Improvements in nutrition standards (65.9 to 67.8) and protein quality (74.7 to 77.5) reflect enhanced dietary diversification. Production volatility remains a concern, with a slight decline (56.07 to 58.00), underscoring climate-related risks.

CONCLUSIONS

Having the intention of analyzing the agricultural sustainability of Romania, in comparison with European countries in economic, environmental, social, and political terms, by analyzing the central agricultural food policies related to food sustainability worldwide, the authors started from the assumption that food security policies are indeed an integral part of agriculture-food policies. We observed that the inclusion of food security measures within broader agricultural and food policies is crucial to ensure the production, processing, distribution, and consumption of safe and wholesome food. These policies aim to protect public health, prevent foodborne illnesses, and maintain consumer confidence in the food system.

Given Romania's fluctuating position in the Global Food Security Index and the identified indicators related to food security improvements, it is advisable to implement comprehensive educational campaigns and awareness initiatives targeting consumers, producers, and stakeholders.

Romania’s food security is on a positive trajectory, supported by targeted investments and policy reforms. However, achieving long-term resilience requires addressing climate risks, economic disparities, and production inefficiencies while capitalizing on opportunities like sustainable agriculture and organic product development. Romania’s food security landscape is improving steadily, supported by robust food safety standards, economic growth, and investments in infrastructure and sustainability.

1. Food Security as a Pillar of Sustainability

Food security is integral to sustainable development, requiring balanced efforts to meet current needs while preserving resources for future generations. Romania's progress reflects a growing alignment with global sustainability goals.

2. Improvements in Production and Consumption Trends

Significant progress in key crops like wheat, barley, and rapeseed highlights Romania's agricultural potential, while rising consumption of cereals and dairy indicates increased demand for staple and nutritious products. However, declining fruit consumption and import dependency on staples like meat and fish underline persistent vulnerabilities.

3. Key Challenges

Climate change, economic disparities, and production volatility remain critical threats to food security, affecting self-sufficiency and resilience [24]. These challenges emphasize the need for adaptive strategies and stronger support for rural and vulnerable communities.

4. Opportunities for Development

Investments in sustainable agriculture, enhanced logistics, and European funding offer avenues to improve food production, reduce waste, and enhance resilience. Promoting organic farming and modernizing agricultural practices can further strengthen the agri-food sector.

5. Strategic Recommendations

Policies should prioritize sustainable practices, socio-economic equity, and climate adaptation. Leveraging innovation, improving local production, and reducing import dependency are essential for ensuring long-term food security and stability.

Romania has made progress in food security, but addressing climate risks, import reliance, and social disparities is vital for sustainable growth. With targeted policies and investments, Romania can achieve a resilient, equitable, and secure food system.

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