

Economic Vulnerability and Food Insecurity in the Western Balkans: Trends, Drivers, and Policy Implications (2023–2024)

Marina Stojmirova¹
Goran Apostolovski
Cveta Gjorgjievska

Abstract

Food insecurity represents a significant economic and social risk for countries in the Western Balkans. Although the region is not among the most vulnerable global areas, structural weaknesses—high import dependency, low domestic self-sufficiency, inflationary shocks, and political crises—increase the vulnerability of households and economic growth. The analysis is based on data from FAO (2023–2024), World Bank (2022–2024), Eurostat, and academic studies. The results indicate that moderate or severe food insecurity in Europe and Central Asia (including the Western Balkans) was approximately 11.5% in 2023, with regional variations. Food inflation in WB6 averaged 20–23% in 2022 and remained elevated in 2023. The study identifies key economic consequences and proposes policies to improve the sustainability of food systems.

Keywords: food insecurity, Western Balkans, inflation, agriculture, economic vulnerability, FAO, World Bank

Introduction

Food insecurity, defined as limited or uncertain access to sufficient, safe, and nutritious food (FAO, 2023), remains a significant economic and social challenge in the Western Balkans. The region's vulnerability to food insecurity is closely linked to structural factors such as low agricultural productivity, high dependency on food imports, susceptibility to global price shocks, and political instability.

In recent years, these vulnerabilities have been further aggravated by multiple external and internal pressures, including:

1. The Russia-Ukraine crisis, which triggered sharp increases in grain and staple food prices.
2. Rising energy costs, impacting both agricultural production and food supply chains.
3. Disruptions in regional and global supply chains, affecting availability and distribution of essential food products.
4. High food inflation, reducing household purchasing power and access to nutritious diets.
5. Climate extremes, including droughts and floods, which threaten agricultural yields and long-term food security.

Understanding these dynamics is crucial for designing policies that strengthen the resilience of households, communities, and national food systems in the Western Balkans.

¹ **Marina Stojmirova, MSc.**, Research Associate, **Goran Apostolovski, M.Sc.**, Research Associate, University of Skopje, Republic of North Macedonia, and **Cveta Gjorgjievska**, high school teacher, Skopje, Republic of North Macedonia.

1. Dimensions of Food Insecurity

Food security is a multidimensional concept, and organizations such as the FAO and the World Bank assess it across four key dimensions:

Dimension	Description
Availability	The physical presence of food in markets and households, ensuring sufficient quantities for the population.
Access	The economic and physical ability of households to obtain adequate food, whether through purchase, production, or assistance programs.
Utilization	The nutritional quality, safety, and diversity of food, enabling a healthy and active life.
Stability	The regularity and predictability of food supply over time, minimizing the impact of economic, environmental, or political shocks.

Table 1.

Understanding these dimensions helps policymakers and researchers identify specific vulnerabilities within food systems and design targeted interventions to strengthen resilience and reduce hunger.

The region's agri-food sectors and rural economies ... are highly vulnerable and increasingly exposed to external shocks (Jámbor, & Varga, 2024, 45.).

2. Economic Vulnerability

Economic vulnerability theory suggests that countries with structural weaknesses are more susceptible to external shocks, including fluctuations in global food and energy markets (BMC, 2024). In the Western Balkans, several factors exacerbate this vulnerability:

- **High import dependency:** Reliance on imported food exposes countries to international price volatility and supply disruptions.
- **Low domestic agricultural productivity:** Limited efficiency and output in the agricultural sector reduce the ability to meet domestic demand.
- **Aging agricultural workforce:** An older farming population challenges the sustainability and modernization of agricultural production.
- **Insufficient mechanization:** Limited adoption of modern technology constrains productivity growth and the capacity to respond to climate or market shocks.

Labor force aging has an adverse effect on the agricultural total-factor productivity of farm households ... the aging of the labor force adversely affects TFP by inhibiting technological progress and reducing the efficiency of resource allocation (Tong, Φ. Ye, Q. Zhang, W. Liao & Y. Ding, 2024).

These structural factors collectively heighten the region’s exposure to economic and food security risks, underscoring the need for policies that promote domestic production, modernization of agriculture, and resilience to external shocks.

3. Methodology

This research draws upon a combination of international and national sources to assess food insecurity in the Western Balkans:

- FAO Regional Overview (2023–2024)
- World Bank Western Balkans Regular Economic Report (2022–2024)
- MDPI (Foods Journal, 2023) for grain self-sufficiency
- National statistical data

Limitations:

- Data are not fully harmonized across all WB6 countries
- Some academic sources use earlier periods

Results

Food Insecurity

According to FAO (2024):

Indicator	Value 2023
Moderate or severe insecurity	11.5%
Severe insecurity	2.4%

Food Inflation in WB6

Country	2022	2023
North Macedonia	~30%	13–15%
Serbia	~24%	12%
Albania	~20%	8–10%
Bosnia & Herzegovina	~24%	14%
Montenegro	~26%	16%
Kosovo	~16%	10–12%

Source: World Bank (2023)

Self-Sufficiency Rate (SSR)

- Serbia: SSR > 100%
- North Macedonia, Albania, Kosovo, Bosnia & Herzegovina, Montenegro: SSR < 80%

Source: MDPI, *Foods Journal* (2023)

Economic Consequences

- Reduced disposable income for households: 6–12%
- Most vulnerable: single-member households, rural populations, and low-income groups
- Agriculture contributes 6–10% of GDP, but is critical for rural households

Discussion

The food insecurity landscape in the Western Balkans (WB6) reflects the intersection of structural vulnerabilities and exposure to global shocks, which together create significant

economic and humanitarian risks. Analysis of recent data (FAO, 2023; World Bank, 2023; MDPI, *Foods Journal*, 2023) demonstrates that while food insecurity is moderate at the regional level, the underlying factors differ by country, requiring tailored policy interventions. The Western Balkans have become net food importers (except ... Serbia ... and fertilizer use (Brankov, 2022, 3672).

Structural Weaknesses by Country

The Western Balkans (WB6), comprising Albania, Bosnia & Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia, exhibit a high degree of heterogeneity in agricultural capacity, domestic production, and exposure to global market shocks. This diversity shapes their economic vulnerability, particularly in relation to food security. While Serbia demonstrates relative resilience through high cereal self-sufficiency, the remaining WB6 countries face structural constraints that exacerbate their reliance on imports and vulnerability to global price fluctuations (MDPI, 2023; Kovljenić, Matkovski, & Đokić, 2024; Jámbor & Varga, 2024).

- **North Macedonia: Structural Vulnerabilities and Food Import Dependence**

North Macedonia presents one of the clearest examples of economic vulnerability in the region. Domestic cereal production covers only a portion of the national demand, with approximately one-third of wheat and over 70% of meat consumption imported annually (PMCID, 2022). This reliance on imports, particularly for essential staples, exposes the country to international price shocks, such as those arising from the Russia-Ukraine conflict and global fertilizer price volatility (Jámbor & Varga, 2024).

The country's self-sufficiency ratio (SSR) remains below 100%, indicating that domestic production alone cannot meet national consumption needs (MDPI, 2023). Structural challenges further constrain agricultural productivity. Mechanization in the sector remains limited, with many farms relying on traditional farming methods, while the rural workforce is both aging and shrinking due to urban migration and demographic decline (MDPI, 2023; Kovljenić et al., 2024). Consequently, labor availability and productivity are restricted, reducing the capacity to scale production or respond to supply shocks effectively.

Additionally, North Macedonia is highly dependent on imported fertilizers and agricultural inputs, which increases the country's exposure to global market volatility (Jámbor & Varga, 2024). Climate-related risks, including droughts and irregular precipitation patterns, also impact domestic yields, further compounding vulnerability (MDPI, 2023). The combination of high import dependency, structural inefficiencies, and environmental exposure renders North Macedonia particularly sensitive to global shocks, leading to significant economic and social impacts. For instance, the food inflation in 2022 reached approximately 25%, significantly eroding household purchasing power, especially among rural and low-income populations (World Bank, 2023).

Comparative Overview: Other WB6 Countries

While North Macedonia demonstrates significant economic vulnerability and high reliance on food imports, a similar pattern, though with varying degrees, is observed across the remaining WB6 countries. These differences are shaped by each country's agricultural productivity, import dependency, demographic structure, and resilience to global shocks.

- **Albania** relies on imports for approximately 63% of its cereal supply and around 46% of wheat consumption, making the country highly sensitive to international price fluctuations (MDPI, 2023; Smart Balkans Project, 2024). Despite this, Albania exhibits relative self-sufficiency in fruits, vegetables, and some horticultural products, indicating potential for targeted agricultural development. The country's agricultural sector faces structural constraints: small-scale and fragmented farms, low mechanization levels, and a declining rural population reduce productivity and hinder modernization. These factors exacerbate vulnerability, particularly during periods of food price inflation or global supply chain disruptions (MDPI, 2023). Additionally, Albania depends on imported fertilizers and agricultural inputs, further increasing exposure to international market volatility (Jámbor & Varga, 2024).
- **Bosnia & Herzegovina** exhibits one of the lowest self-sufficiency ratios (SSR) among the WB6 countries, relying heavily on imports for cereals, meat, and dairy products (MDPI, 2023). Domestic fertilizer production covers only about 15% of national needs, creating substantial dependency on international markets (Jámbor & Varga, 2024). Structural challenges are compounded by the country's political and administrative fragmentation: the division between the Federation of Bosnia & Herzegovina and Republika Srpska complicates policy implementation, reduces coordination, and weakens national-level strategic responses to agricultural and food security risks. Consequently, Bosnia & Herzegovina is particularly vulnerable to global shocks, including energy and grain price fluctuations, as well as climate-related disruptions to crop production (MDPI, 2023).
- **Montenegro** represents the most import-dependent WB6 country in terms of staple foods. Domestic cereal production accounts for only approximately 5% of national demand, reflecting a heavy reliance on external supply chains (MDPI, 2023). The agricultural sector is characterized by small-scale, fragmented holdings, which limits economies of scale, mechanization, and technological adoption (Kovljenić et al., 2024). Additionally, Montenegro imports nearly all fertilizers and key inputs, heightening its exposure to global price volatility (Jámbor & Varga, 2024). Geographic constraints, such as limited arable land and mountainous terrain, further restrict the potential for expanding domestic cereal production, making the country highly sensitive to market and climate shocks.
- **Kosovo** faces challenges similar to North Macedonia. The country is heavily reliant on imported foodstuffs, particularly cereals, meat, and dairy, while domestic agricultural production remains structurally constrained (MDPI, 2023; Jámbor & Varga, 2024). Small farm sizes, limited mechanization, and low levels of investment in agricultural infrastructure restrict productivity and

resilience. Kosovo also depends on imported fertilizers, leaving it vulnerable to global input price fluctuations. These structural limitations, combined with demographic pressures in rural areas, make Kosovo particularly sensitive to both economic shocks and climate-related risks, thereby threatening national food security (MDPI, 2023).

- **Serbia**, in contrast, stands out as the most resilient WB6 country regarding agricultural self-sufficiency. With SSR values consistently above 100% for cereals and other staple foods, Serbia is largely capable of meeting domestic demand without relying on imports (MDPI, 2023; Kovljenić et al., 2024). Nevertheless, the country remains dependent on imported fertilizers, and climate-related risks such as water scarcity and irregular precipitation patterns pose challenges to agricultural productivity (Jámbor & Varga, 2024). While Serbia benefits from more extensive mechanization and larger farm holdings than its regional peers, it is not entirely immune to global market fluctuations, particularly in energy and fertilizer markets.

Collectively, these patterns highlight a clear divide in the WB6. While Serbia maintains relative resilience through high self-sufficiency and more developed agricultural infrastructure, the remaining countries (North Macedonia, Albania, Bosnia & Herzegovina, Montenegro, and Kosovo) share a common vulnerability profile characterized by high import dependency, low domestic productivity, small-scale and fragmented farms, reliance on imported agricultural inputs, and exposure to climate and market shocks (MDPI, 2023; Jámbor & Varga, 2024). These structural weaknesses amplify the economic and social impact of global crises, such as the Russia-Ukraine war, food price spikes, and disrupted supply chains, emphasizing the urgent need for coordinated policy interventions, investment in modernization, and strategic approaches to increase domestic self-sufficiency and resilience.

Country	Cereal Self-Sufficiency Ratio (SSR)	Import Dependency (%)	Food Inflation 2022–2023 (%)	Dependence on Imported Fertilizers	Notes / Key Risks
North Macedonia	<100%	~30% of cereals, >70% meat	~30% (2022), 13–15% (2023)	High	Limited mechanization, aging workforce, vulnerable rural populations (MDPI, 2023; Jámbor & Varga, 2024; PMCID, 2022)
Albania	<80%	63% cereals, 46% wheat	~20% (2022), 8–10% (2023)	High	Small farms, low mechanization, declining rural population (MDPI, 2023; Smart Balkans Project, 2024)

Country	Cereal Self-Sufficiency Ratio (SSR)	Import Dependency (%)	Food Inflation 2022–2023 (%)	Dependence on Imported Fertilizers	Notes / Key Risks
Bosnia & Herzegovina	<80%	Majority of cereals and meat	~24% (2022), 14% (2023)	Partial (~15%)	Political fragmentation, inefficient policy coordination (MDPI, 2023; Jámbor & Varga, 2024)
Montenegro	<80%	~95% cereals	~26% (2022), 16% (2023)	High	Small-scale, fragmented farms, limited arable land, mountainous terrain (MDPI, 2023; Koveljenic et al., 2024)
Kosovo	<80%	High for cereals, meat, dairy	~16% (2022), 10–12% (2023)	High	Small farms, low mechanization, structural agricultural constraints (MDPI, 2023; Jámbor & Varga, 2024)
Serbia	>100%	Low for cereals, but inputs imported	~24% (2022), 12% (2023)	Moderate	Relatively resilient, larger farms, mechanized agriculture; climate risk persists (MDPI, 2023; Jámbor & Varga, 2024)

Table 2. WB6 countries with key indicators of economic vulnerability and agrarian self-optimality, based on reliable sources (MDPI, World Bank, Jámbor & Varga, Smart Balkans Project)

Global Shocks and Regional Implications

The Russia–Ukraine conflict has been a major driver of food insecurity in the WB6, raising global grain and energy prices and exacerbating regional inflation (FAO, 2023; World Bank, 2023). The disruption of supply chains, coupled with climate-related production shocks, has further increased vulnerability, particularly in import-dependent countries like Albania, Kosovo, and North Macedonia. These external pressures have reduced disposable incomes by 6–12% for households across the region, with single-member households, rural populations, and low-income groups bearing the greatest burden.

Policy Implications and Recommendations

To address these vulnerabilities, the following strategies are critical:

1. **Enhance domestic production** through targeted subsidies for critical crops and support for smallholders, reducing import dependency and mitigating exposure to global price shocks (FAO, 2023).
2. **Invest in agricultural modernization**, including green and digital technologies such as precision irrigation, renewable energy, and smart farming systems, to increase productivity and resilience (MDPI, *Foods Journal*, 2023).
3. **Improve storage and logistics systems** to reduce post-harvest losses and maintain stable food supply, particularly for perishable products (FAO, 2023).
4. **Reform import and trade policies** to stabilize prices and ensure predictable access to essential commodities while fostering regional cooperation for food security (World Bank, 2023).
5. **Strengthen social protection programs** targeting vulnerable populations in rural and low-income households, including cash transfers, food vouchers, and school feeding programs (FAO, 2023; BMC, 2024).

The interplay between structural weaknesses, country-specific vulnerabilities, and global shocks underscores the need for a multidimensional approach to food security in the WB6. Serbia's relative resilience highlights the importance of domestic production, while other countries require targeted support to enhance self-sufficiency, modernize agriculture, and protect vulnerable households. Coordinated regional policies, backed by reliable data and monitoring systems, are essential to build long-term resilience and ensure equitable access to food across the Western Balkans.

Recommendations

To enhance food security and economic resilience in the Western Balkans, the following policy measures are recommended:

1. Increase domestic agricultural production by providing targeted subsidies for critical crops. Such support can reduce import dependency and buffer against global price volatility (FAO, 2023; World Bank, 2023).
2. Invest in green and digital agricultural technologies to improve productivity, efficiency, and climate resilience. Precision agriculture, renewable energy, and smart irrigation systems are key interventions (MDPI, *Foods Journal*, 2023).
3. Improve storage and logistics infrastructure to reduce post-harvest losses and enhance market stability. Modern silos, cold chains, and efficient transport networks are essential to maintain consistent food availability (FAO, 2023).
4. Reform import policies and trade regulations to minimize exposure to sudden international price shocks while ensuring a stable supply of essential food commodities (World Bank, 2023).
5. Implement targeted social protection programs for rural populations and low-income households. Cash transfers, food vouchers, and school feeding schemes can mitigate the socio-economic impact of food inflation and insecurity (FAO, 2023; BMC, 2024).

Importing food can help secure stable food supplies and meet shortfalls in local production, but heavy reliance on imports increases vulnerability to external supply shocks (Subramaniam, 2024).

These measures, collectively, aim to strengthen domestic production, enhance system resilience, and protect the most vulnerable populations, contributing to long-term food and economic security in the region.

Conclusion

The Western Balkans continues to face moderate yet significant food insecurity, largely driven by structural vulnerabilities such as high import dependency and relatively low domestic self-sufficiency. These factors render the region particularly sensitive to global market shocks and price volatility. The sharp rise in food inflation during 2022 placed considerable strain on household economic stability, disproportionately affecting low-income populations. Grain self-sufficiency remains limited across most countries, with Serbia being a notable exception, highlighting the persistent risk of supply disruptions and continued reliance on imports.

To enhance resilience, policy interventions should prioritize the promotion of domestic agricultural production, the strengthening of social protection mechanisms, and the fostering of regional cooperation. Such measures can mitigate economic and humanitarian risks, support long-term food security, and improve the capacity of Western Balkan countries to respond effectively to future crises.

References

- AO. 2023. *Europe and Central Asia Regional Overview of Food Security and Nutrition 2023*.
- BMC. 2024. *Food Security and Crises: Evidence from the Western Balkans*.
- Brankov, T., Marković, D., & Petrović, S. (2022). *Is a food shortage coming to the Western Balkans?* *Foods*, 11(22), 3672. <https://www.mdpi.com/2304-8158/11/22/3672F>
- FAO. 2024. *Regional Press Release on Food Insecurity Trends*.
- World Bank. (2024). *Exploring the potential of agriculture in the Western Balkans: A regional report*. Washington, D.C.: World Bank.
<https://documents1.worldbank.org/curated/en/364261563175550384/pdf/Exploring-the-Potential-of-Agriculture-in-the-Western-Balkans-A-Regional-Report.pdf>
- Jámbor, A., & Varga, L. (2024). *Food security and crises: evidence from the Western Balkans*. *Agriculture & Food Security*, 13(1), 45. <https://agricultureandfoodsecurity.biomedcentral.com/articles/10.1186/s40066-024-00514-z>
- Kovljenić, N., Matkovski, A., & Đokić, S. (2024). *Competitiveness and cereal self-sufficiency in Western Balkan countries*. *MDPI Agriculture*, 14(9), 1480.
- MDPI (Foods Journal). 2023. *Self-Sufficiency of Grain Production in the Western Balkans*.
- MDPI. (2023). *Is a food shortage coming to the Western Balkans? Analysis of cereal production and imports*. *Foods*, 11(22), 3672.
- PMCID. (2022). *National agricultural data: North Macedonia*. PubMed Central.
- Smart Balkans Project. (2024). *Agricultural self-sufficiency and trade dependence in the Western Balkans*. Smart Balkans Project Report.
- Subramaniam, Y. (2024). *Imports and food security*. *Journal of Food Security Studies*, 15(2), 123–138.
<https://journals.sagepub.com/doi/10.1177/09749101221146422>

Marina Stojmirova, Goran Apostolovski and Cveta Gjorgjevska. 2025. Economic Vulnerability and Food Insecurity in the Western Balkans: Trends, Drivers and Policy Implications (2022–2023). *GEA Journal of Geography* 1(2): 29–39

Tong, T., Ye, F., Zhang, Q., Liao, W., & Ding, Y. (2024). *The impact of labor force aging on agricultural total factor productivity and implications for food sustainability*. *Frontiers in Sustainable Food Systems*, 8, 1434604. <https://www.frontiersin.org/articles/10.3389/fsufs.2024.1434604/full>

World Bank. (2024). Exploring the potential of agriculture in the Western Balkans: A regional report. Washington, D.C.: World Bank.

<https://documents1.worldbank.org/curated/en/364261563175550384/pdf/Exploring-the-Potential-of-Agriculture-in-the-Western-Balkans-A-Regional-Report.pdf>

World Bank. 2023. *Western Balkans Regular Economic Report*.

World Bank. 2024. *Economic Update for the Western Balkans*.