The impact of migration on food security in Armenia

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Abstract. This study aims to evaluate the current state and structural determinants of food security in Armenia, emphasizing the interaction between agricultural capacity, migration dynamics, and policy frameworks. Using official statistical data for 2020–2024 and sectoral analysis, the paper applies a descriptive-analytical method to assess production self-sufficiency, import dependency, and demographic pressures. The results show that Armenia is self-sufficient in potatoes, vegetables, fruits, and fish, yet remains heavily dependent on imports of wheat, vegetable oil, sugar, and livestock products. Internal migration leads to agricultural land abandonment and rural labor shortages, while external migration and population inflows intensify urban food demand. Despite the implementation of the 2023–2026 Food Security Development Strategy, structural vulnerabilities persist due to outdated technologies, fragmented supply chains, and limited food reserves. The study concludes that Armenia's food security strategy must integrate migration management, technological modernization, and land-use regulation. Enhancing local production, reducing post-harvest losses, and promoting rural revitalization are identified as key policy priorities for achieving sustainable food security and long-term national resilience.

1 Introduction

Food security is universally recognized as a fundamental component of national security, as it determines a country's ability to safeguard the well-being and stability of its population under any circumstances - including economic shocks, emergencies, or military threats. According to international practice, the level of food security is assessed along three core dimensions: availability, accessibility, and quality/safety. In the case of Armenia, these dimensions are shaped by unique structural vulnerabilities such as the long-standing geopolitical blockade, limited transport corridors, high dependence on imported staples, and pronounced regional and socio-economic disparities.

Despite ongoing government efforts (particularly the adoption of the 2023-2026 Food Security Development Strategy) Armenia continues to face major challenges in achieving

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self-sufficiency in essential food products. While certain commodities such as potatoes, vegetables, fruits, and fish exhibit relatively high self-sufficiency ratios, the country remains heavily dependent on imports of wheat, vegetable oil, sugar, and livestock products. Compounding these structural constraints is the continuous influence of migration flows. Both external and internal migration significantly reshape labor availability, consumption patterns, and agricultural productivity. In particular, rural-to-urban migration contributes to land abandonment, a shrinking agricultural workforce, and an expanding urban consumer base. Given these dynamics, the relevance of this study lies in providing an integrated assessment of Armenia's current food security landscape, identifying the key sectoral and demographic factors shaping it, and examining the role of migration as an amplifying or mitigating force.

2 Literature review

Ensuring food security requires guaranteeing the reproductive integrity of the agri-food system, within which the formation of an efficient agro-industrial structure plays a crucial role [1]. In the 21st century, food provision is among the most critical issues and that a key indicator of state independence is the ability to meet 80% of domestic demand through local production. Efforts in this direction are underway in Armenia, although certain issues still persist [2]. The concept of food security has acquired a new meaning and requires clarification, highlighting the essence of the concept as an economic category within a market economy and the importance of developing research methodology at the regional level [3].

Spanish researchers R. Ramirez et al. point out that food security (especially in recent years) has become one of the most important issues on the global economic agenda [4]. This is largely driven by population growth, urbanization, and climate change. Food security is considered a global challenge and consists of three key components: the physical availability of food, the economic accessibility of food, and its utilization [5].

Food security is crucial for human well-being and sustainable development, but its relationship with migration remains peripheral and neglected issue in policy-making [6]. The negative balance of external migration hinders both economic and social development. Therefore, policies should be implemented to regulate migration flows, incentivize the return of migrants, and ensure the efficient management of labor and capital movements [7].

Studies show that there is a direct link between rural poverty reduction, rising educational attainment, and rural-urban migration [8]. The study particularly emphasizes the importance of improving living conditions in high-poverty settlements, facilitating farmers' access to markets, and strengthening territorial food systems. According to the Smith (2020) food insecurity significantly influences migration intentions and preparations in low- and middle-income countries, with varying effects by gender and income level [9]. In another study Smith (2021) claims that food insecurity at origin and within-country inequality in food insecurity at origin are significantly linked, driving international migration flows [10].

Addressing food security challenges, the article "Food Supply and Food Security of the Population of the World's Countries in the Context of a Changing World Order: Governance Aspects" notes that ensuring the population's access to food is the responsibility of every state. However, in many countries, this issue largely depends on existing export-import relations. Therefore, it is necessary to develop long-term governance and legal frameworks to ensure food security [11]. People consider migration only when they expect a higher standard of well-being at their destination. However, it is well known that migration entails financial costs, and insufficient financial resources can restrict migration opportunities [12]. However restrictive immigration policies negatively impact food security and health of displaced persons, highlighting the new for research to address food insecurity across diverse geographical and political settings [13]

3 Methodology

This study uses a quantitative approach based on secondary data to examine the relationship between food security and migration in Armenia. Data were sourced from national and international databases, including the National Statistical Service of Armenia, FAO, and the World Bank, covering key indicators of food availability, access, and migration trends over the period 2010-2023.

Descriptive statistics and trend analysis were used to identify patterns in food security and migration. To explore potential relationships, correlation and regression analyses were applied, focusing on variables such as household income, agricultural output, remittances, and regional disparities. Robustness checks were performed to ensure the reliability of the findings. This methodology provides a clear quantitative assessment of how food security conditions are associated with migration patterns in Armenia.

4 Analysis

Food security is one of the most essential components of national security, as it is aimed at ensuring that every member of society has access to sufficient quantities of quality food. Food must be accessible under all circumstances, including during emergencies and periods of martial law. A country is considered food secure when its economy is developed to a level that guarantees both the physical and economic accessibility of food that meets public health standards for the population.

Food security is primarily ensured through the development of agriculture, food production, and import systems. In the Republic of Armenia, ensuring food security is a key national security priority, given the country's lack of access to the sea, limited external communication routes, and the fact that more than half of the population remains at risk of food insecurity. In late June 2023, the Government approved the Strategy for the Development of the Food Security System and the Action Plan for 2023-2026. The main objectives of the strategy include increasing the level of food security, particularly the self-sufficiency of essential food products, replenishing material reserve stocks, and ensuring that the population has the economic capacity to acquire food that meets minimum physiological standards. The main priorities for ensuring food security in Armenia are:

- guaranteeing self-sufficiency, safety, and quality of food products;
- ensuring food accessibility;
- providing food with high nutritional value;
- increasing the efficiency of food resource management;
- ensuring balanced use of natural resources and reducing or preventing negative environmental impacts.

The goal of the food security program is to ensure access to the minimum food basket for all population groups. Since agriculture is the primary sector that ensures food security, in order to assess the current state of food security in Armenia, Table 1 below presents recent data on key strategic crops.

Table 1. Sown Area and Gross Yield of Major Agricultural Crops *

	Sown area (1000 ha)					Gross Yield (1000 tons)				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Wheat and legumes	121,7	124,9	114,4	127,1	116,4	246,1	153,2	241,9	290,6	218,3
Potato	20,5	20,1	19,3	18,7	17,5	437,2	364,6	351,4	364,5	337,7
Vegetables	21,3	19,5	19,1	18,0	18,3	692,8	619,6	610,6	607,5	649,3
Melons	4,0	4,5	4,1	4,0	3,9	126,6	131,8	124,5	116,6	122,7
Fruts and berries	43,8	44,7	45,0	46,2	47,9	274,3	323,0	346,3	361,2	341,4
Grape	16,7	16,5	16,2	15,6	15,4	283,2	237,1	225,8	213,4	195,8

*the data for the table was obtained from the Publications of the Statistical comitee of RA [14].

The data in the table show that in 2021, compared to 2020, the sown area of cereals and grain crops increased; however, the total yield decreased, which was associated with drought conditions. In international practice, countries' food security status is assessed using the Global Food Security Index, which consists of three components: food availability, accessibility, and quality and safety, each of which is determined by several underlying factors. In 2019, the Global Food Security Index was calculated for Armenia for the first time, resulting in an overall score of 57.1, including 51.7 for food availability, 66.2 for accessibility, and 45.4 for quality and safety [14]. Table 2 presents the consumption norms for products included in the minimum food basket and the actual consumption data.

Table 2. Cost of the Minimum Consumer Basket in 2024*

	Daily consumption norm (kg)	Actual daily consumption (kg)
Cereals	0,335	0,46
Beef	0,1	0,05
Fish	0,03	0,02
Dairy	0,255	-
Egg	0,5	0,18
Vegetable oil	0,02	0,3
Fruit	0,2	0,1
Vegetable	0,3	0,2
Potato	0,25	0,14
Sugar	0,25	0,24

*the data for the table was obtained from the Publications of the Statistical comitee of RA [14].

According to the data in Table 2, the actual consumption levels of most of the aforementioned food products fall below the recommended daily intake, which is largely attributable to the population's low income levels. Self-sufficiency is an important indicator in assessing a country's food security. The level of self-sufficiency for staple food products is presented in Figure 1.

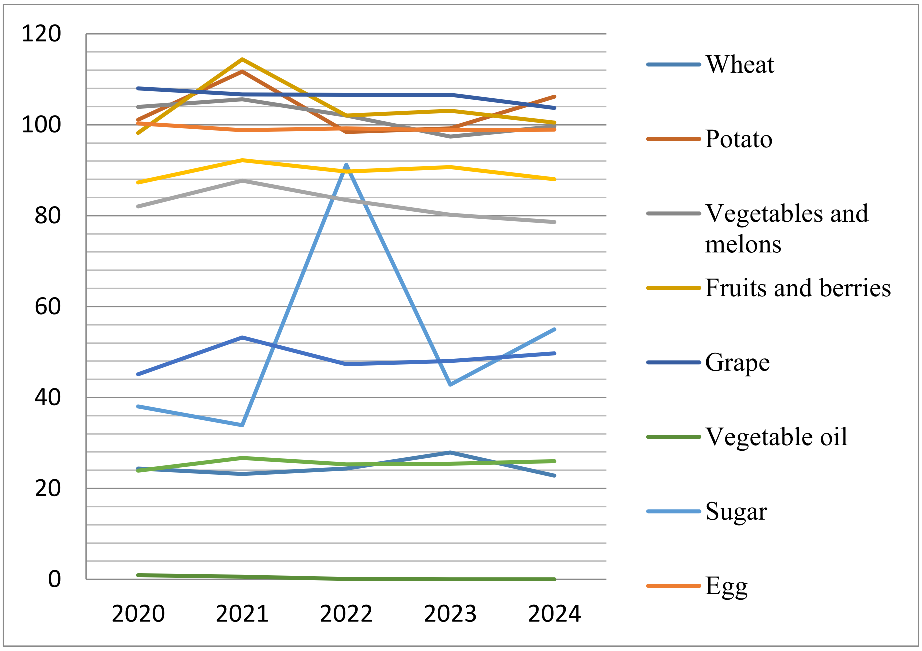

Fig. 1. Self-Sufficiency of Essential Food Products, source: [14].

According to data from the Statistical Committee of the Republic of Armenia, the wheat self-sufficiency indicator reached its lowest level in 2021 at 23.2% and its highest level in 2023 at 27.9%. Data for 2024 indicate that, compared to 2020, the quantities of vegetables, eggs, milk, and fish have decreased, whereas wheat, fruit, and meat products have registered growth. During the same period, the trends in sugar self-sufficiency were inconsistent. This indicator recorded its highest increase in 2022 at 91.2%, driven by increased local sugar production due to imported raw materials. In 2023, it decreased by approximately 50%, reaching 42.8%, which was determined by the low cost of imported sugar.

These figures demonstrate that self-sufficiency in Armenia is high for the following products: potatoes (99.2%), vegetables and melons (97.4%), fruits and berries (103.1%), grapes (106.6%), eggs (98.8%), and fish (136.8%). In contrast, for other essential food products, Armenia remains non-self-sufficient and dependent on imports. Particular attention should be paid to increasing production of critical commodities such as wheat, vegetable oil, sugar, pork, and poultry.

As is well known, approximately 50% of arable land in Armenia remains uncultivated. Under such conditions, achieving adequate food self-sufficiency requires modernization of agricultural technologies. This includes introducing high-yield, disease-, pest-, and drought-resistant crop varieties and improving the efficiency of water resource management. These measures should be accompanied by targeted government subsidies aimed at expanding sowing areas. Additionally, it is essential to import and breed high-productivity livestock breeds, strengthen infectious disease prevention and biosecurity systems, and develop a sustainable feed base. For the sector's sustainable development, state-supported promotion of scientific research, the introduction of technological innovations, and the development of agricultural education programs and advisory services are of key importance. For the sustainable development of the sector, promoting scientific research with state support, introducing technological innovations, and developing agricultural education programs and advisory services are of key importance.

The 2020 National Security Strategy of the Republic of Armenia emphasizes that the country must make concerted efforts to establish an agri-food system and increase self-sufficiency in essential food products by enhancing land-use efficiency, supporting the development of the agricultural sector, and promoting local production.

Food security in Armenia is significantly influenced by both external and internal migration. Differences in the socio-economic development levels of individual administrative-territorial units have led to population flows directed from rural to urban areas, from peripheral regions to centers, from small towns to large cities, and from highland areas to lowlands. These movements have exacerbated the imbalances in the country's demographic system. Particularly concerning are depopulation trends in remote and highland areas, small villages, and the decreasing share of the population in small and medium-sized towns, which have contributed to a rapid increase in both the absolute and relative population of Yerevan.

In 2023, the number of migrants who left the country amounted to 100,821 individuals, of whom 64,916 migrated for employment purposes. According to migration flows between 2021 and 2023, 12,637 people migrated from Yerevan and 22,461 from other regions [14]. According to official statistics, the number of foreign nationals arriving in Armenia and obtaining residence permits in 2022 was 16,659, exceeding the 8,639 recorded in 2021 and the 8,761 in 2023. This increase was largely due to the special military operation between Russia and Ukraine, as 8,660 individuals migrated from Russia to Armenia in 2022, compared to 1,487 in 2021 and 3,350 in 2023. Migration flows from India also constitute a relatively significant share of foreign arrivals: 2,182 in 2021, 2,212 in 2022, and 2,035 in 2023 [14]. In 2023, the number of forcibly displaced persons from Artsakh was 100,625, of whom 11,351 left Armenia, while 68,932 settled across various localities in Armenian regions [14].

The employment of migrants arriving from Russia is largely unrelated to the agricultural sector, unlike some migrants from India who are engaged in agricultural activities. Such migration flows contribute to increased consumption of goods, particularly food products [15].

The primary purpose of internal migration is to find employment within the country that improves living standards; internal migration negatively affects the country's socio-economic situation, particularly the agricultural sector. As internal migration is largely driven by the economic dominance of Yerevan, it is necessary to closely monitor demographic indicators, average monthly wages, unemployment rates, and other socio-economic variables in the regions. The table below presents the distribution of Armenia's population across regional cities and villages.

Table 3. Permanent Population of RA, 2024, thousand people*

	Total	Urban	Rural
Republic of Armenia	2991,2	1915,3	1075,9
Yerevan	1106,3	1106,3	-
Aragatsotn	131,8	27,2	104,6
Ararat	255,5	71,1	184,4
Armavir	259,7	83,7	176,0
Gegharkunik	213,2	67,6	145,6
Լոռի	226,3	126,9	99,4
Kotayk	278,1	151,7	126,4
Shirak	238,9	136,9	102,0
Syunik	116,4	78,3	38,1
Vayots Dzor	48,5	16,9	31,6

Tavush	116,5	48,7	67,8

*the data for the table was obtained from the Publications of the Statistical comitee of RA [14].

According to the data in Table 3, in several regions (Lori, Kotayk, Shirak, Syunik), the number of urban residents exceeds that of rural residents. Rural populations are generally both producers and consumers of agricultural products, whereas urban populations are predominantly consumers. Consequently, rural-to-urban migration increases not only the number of consumers but also the amount of uncultivated land, which leads to reduced agricultural productivity and exacerbates food security challenges.

According to the results of the 2023 Integrated Living Conditions Survey (ILCS), during the period 2021-2023, a total of 237.7 thousand household members were involved in migration movements. The survey recorded that during this period, approximately 100.8 thousand individuals (42.4%) left their places of residence and did not return (departed migrants), 58.8 thousand household members (24.7%) returned after migration, while 78.1 thousand people (32.9%) were newly arrived in their respective settlements. Of the migrant household members during the observed period, around 60.2 thousand individuals (25.3%) were involved in internal migration within the territory of the Republic [14]. The primary objectives of ensuring food security in the Republic of Armenia are to:

- guarantee the necessary volume of local production of essential goods;
- ensure sufficient supply of imported products;
- provide food safety for all segments of the population.

To address these challenges, it is necessary to establish stable local food production, reduce losses of processed food products, develop and implement systems for food supply and distribution, strengthen food reserve capacities, and improve the efficiency of supply chains.

5 Conclusion

Armenia's food security remains highly sensitive to both structural and demographic pressures. The long-term blockade and restricted external connectivity have constrained the country's ability to diversify trade routes and stabilize food imports. Meanwhile, limited technological modernization in agriculture and the underutilization of arable land (nearly 50% of which remains uncultivated) prevent the country from reaching adequate levels of self-sufficiency in key strategic commodities such as wheat, vegetable oil, sugar, and livestock products.

At the same time, migration emerges as a decisive factor influencing food system stability. While external migration contributes to labor shortages and rural population decline, internal rural-to-urban migration accelerates the abandonment of agricultural land and expands the share of pure consumers in the population. These dynamics highlight the need for an integrated policy approach that treats food security not only as an agricultural or trade issue, but as a broader socio-demographic challenge.

To ensure long-term resilience, Armenia must prioritize three core directions: (1) modernization and intensification of agricultural production through technology, improved crop varieties, and efficient water management; (2) protection and rational use of agricultural land through incentives for cultivation and targeted subsidies; and (3) demographic stabilization policies that incentivize rural settlement, return migration, and labor retention in agrarian regions. Strengthening food reserves, reducing post-harvest losses, and enhancing supply chain logistics are also essential for improving preparedness against external shocks.

Ultimately, Armenia's path toward sustainable food security depends on its ability to balance local production expansion with strategic import management, while simultaneously countering the negative socio-economic consequences of migration. Only through coordinated state intervention, private sector engagement, and community-level participation can food security transition from a vulnerability into a strategic advantage.

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