# Opportunities For Applying Clustering To Ensure The Sustainable Development Of The Agricultural Sector In The Karabakh And Eastern Zangazur Regions Of The Republic Of Azerbaijan.

**Anar Huseynov[1*]**
**Gulnara Quliyeva[2]**
**Mushfiq Huseynov[3]**
**Elmir Mahmudov[4]**
**Gulnara Huseynova[5]**
**Fidan Babayeva[6]**

[1]Azerbaijan State Agricultural University, "Agribusiness and administration" faculty, department of "Agribusiness and management", Ganja, Azerbaijan,
E-mail: anar.huseynov.79@internet.ru
[2*]Azerbaijan State Agricultural University, "Agribusiness and administration" faculty, department of "Agribusiness and management", Ganja, Azerbaijan,
E-mail: gulnaraquliyeva8@gmail.com
[3]Azerbaijan State Agricultural University, "Agribusiness and administration" faculty, department of "Agribusiness and management", Ganja, Azerbaijan,
E-mail: huseynovmusfiq70@gmail.com
[4]Azerbaijan State Agricultural University, "Agribusiness and administration" faculty, department of "Agribusiness and management", Ganja, Azerbaijan,
E-mail: mahmudov.elmir.1993@gmail.com
[5]Azerbaijan State Agricultural University, "Agribusiness and administration" faculty, department of "Agribusiness and management", Ganja, Azerbaijan,
E-mail: metiska49@gmail.com
[6]Azerbaijan State Agricultural University, "Agricultural economics" faculty, department of "Economics of agrarian sector", Ganja, Azerbaijan,
E-mail: babayevafidan2013@gmail.com

**\*Corresponding Author:** Anar Huseynov

[*]Azerbaijan State Agricultural University, "Agribusiness and administration" faculty, department of "Agribusiness and management", Ganja, Azerbaijan,
E-mail: anar.huseynov.79@internet.ru

**Abstract**
The modern economic system is based on the deepening of globalization processes, development with innovative foundations, the application of scientific and technological achievements, and the increasing role of technological knowledge, realized through the realization of high-value products and services and the formation of mutual management and production methods. In this regard, considering the current economic conditions, the application of new methods in economic management and the formation of a new economic growth model are of great importance. The sustainable development of the agricultural sector, which is considered an important part of the national economy, taking into account the importance of the functions it performs, is one of the priority issues facing the state.

**Key words:** agriculture, post-conflict region, cooperation, agricultural clusterization

## INTRODUCTION
The agricultural sector of the Republic of Azerbaijan plays a significant role in solving a number of socio-economic problems of the country by meeting the demand of the country's population for food and agricultural products, and by supplying other industries with agricultural

commodities. The agricultural sector is considered a strategically important area that ensures the national security of the country's population. In addition, the dependence on imports of agricultural and food products, goods and technical means, the relatively weak financial sustainability of the sector, the weak development of infrastructure, the low level of social sphere in rural areas, the slow pace of scientific, technological and digital transformation processes, and the failure to make efficient use of natural resources are among the issues that need to be addressed [12].

One of the directions for improving the agricultural sector's economic management system, increasing the effectiveness of agricultural production, and modernization is considered to be the formation of regional agricultural clusters in the modern era. The purpose of the article is to provide recommendations on complex measures that are important for the restoration, sustainable formation, and development of agricultural potential in Azerbaijan's post-conflict region, as well as organizational and management issues related to cluster processes for state management bodies, the Ministry of Agriculture, the Ministry of Economy, and other relevant organizations, the cooperative organization of agricultural production and the implementation of a cluster-oriented development concept based on the analysis of foreign experience [22].

## MATERIAL AND METHOD

This article explores the theoretical and methodological foundations of the cluster concept, which aims to develop the clustering process. In modern conditions, comparative analysis, problem analysis, descriptive analysis, forecasting, deduction, and statistical data collection and analysis are used to determine the role of agricultural clusters in ensuring the economic security of countries and regions. Currently, two approaches are being advanced to evaluate the level of food security. In some approaches, ensuring food security is viewed as sustainable development of the agro-industrial complex, while in other approaches, the level of self-sufficiency of the population with food products is taken into account [29].

## RESULTS AND DISCUSSIONS

As we know, the agricultural sector plays a special role in the sustainable development and formation of the country's economy. Insufficient development of this sector can lead to social tensions, instability, sharp decline in socio-economic well-being in rural areas, and hunger in society. Therefore, the development of the agricultural sector is under the control of all states and is considered one of the priority directions in national development programs. The analysis of a number of indicators is of great importance to determine the role of agriculture in the country's economy. According to the information of the State Statistics Committee of the Republic of Azerbaijan, in the last 5 years, approximately 36.3% of the economically active population worked in agriculture, 3.5% of capital investments and 5.8% of GDP were accounted for by agriculture [33]. According to the official data of the Central Bank of the Republic of Azerbaijan, in December 2018, loans to agriculture amounted to 470.0 million manat (with a special rate of 3.6%), in December 2019, loans amounted to 543.4 million manat (special rate of 3.6%), in December 2020, loans amounted to 566.2 million manat (special rate of 3.9%), in December 2021, loans amounted to 591.7 million manat (special rate of 3.5%), and in November 2022, loans amounted to 622.3 million manat (special rate of 3.1%) [34]. An increase in the production of main agricultural products such as cotton, tobacco, potatoes, vegetables, fruits and berries, honey, dairy products, meat, sheep meat and poultry meat has been observed over the period of 2017-2021. During the mentioned period, there has been a dynamic increase in the production of all agricultural products per capita. Additionally, consumption indicators for food products per capita have also shown an increase in all product categories. While the level of self-sufficiency in the main agricultural products has increased during the period of 2017-2021, this indicator is relatively low for products such as refined rice, flour, cereals, pasta, baby food, and fruit/vegetable preserves produced by the food processing industry. Furthermore, there is still a high dependency on imports for certain food and agricultural product categories in our country [33]. Taking into account the specific characteristics of the sector and considering the prospective development trends, the global irrational distribution of resources, and the global ecological, economic, social, and political changes that have not bypassed the Azerbaijani economy, including the agricultural sector, it is

important to develop and manage this sector based on a sustainable development model in the post-conflict region [17].

The issue of ensuring food security has become more acute year by year due to the increase in the world population, including in the Republic of Azerbaijan, as well as climate change. The sustainable development of the agricultural sector must be transformed into a development model based on innovative solutions. The provision of sustainable development at the regional and national levels based on innovation requires the expansion of cooperation in international economic and technological fields and the creation of regional cooperatives. In this regard, taking appropriate steps to increase the efficiency of agricultural production, ensure competitiveness, and effectively integrate all technological processes in the agribusiness value chain is crucial [8]. Currently, the cluster development concept is used as one of the main elements of social-economic development strategy and food security in leading countries around the world. Achieving food security in Azerbaijan is one of the main tasks facing the agricultural sector. There is a need to improve our country's position in the Global Food Security Index.

**Global food security index for 2022**
**Table 1**

| Countries | Indicator | Its place among 113 countries |
|-----------|-----------|-------------------------------|
| Azerbaijan | 59.8 | 66 |
| Turkey | 65.3 | 49 |
| Kazakhstan | 72.1 | 32 |
| Uzbekistan | 57.5 | 73 |
| Tajikistan | 56.7 | 75 |
| Ukraine | 57.9 | 71 |
| Russia | 69.1 | 43 |
| Belarus | 64.5 | 55 |

**Source:** http://foodsecurityindex.eiu.com/  [13]

As shown in the table, with the exception of Kazakhstan, Turkey, and Russia, other countries in the region are characterized by a relatively low food security index, which highlights the urgency of ensuring food security and requires effective means to increase it. One of these means is the creation of agricultural business clusters. Since ensuring national food security is important for all countries, addressing these issues has become a necessity for providing effective methods and tools for food supply. In this regard, the creation of agribusiness clusters is of particular importance. As a form of organization based on specialization in regional and sectoral production, the cluster can serve as a purposeful program for the development of the economy. The article explores the evaluation of the role of agricultural clusters in increasing food security.

The main directions for improving food security indicators based on the implementation of clusterization in agribusiness are as follows:
- deep specialization and application of modern technologies, development of plant and animal husbandry sectors through the supply of high-quality agricultural inputs to cluster participants;
- attracting young specialists to agriculture through state support measures and effective motivation mechanisms;
- increasing the qualifications of personnel in the processing of agricultural products;
- supporting local production, including the development of the value chain for cluster products, the creation of logistics organizations for commercial operations, and the development of cluster product exports;
- Increasing the efficiency of cooperation among members, and attracting investments [15].

The restoration of all economic sectors, including the improvement of the socio-economic level, the achievement of rapid and effective reintegration of the Karabakh and Eastern Zangazur economic regions into the country's economy, taking into account the negative natural-ecological, social, political, and geographical complexity of the region after the post-conflict period in the Azerbaijan Republic, increases the relevance of improving the agricultural sector on the basis of a new development model. In the modern conditions of the Azerbaijani economy, ensuring food security, reducing dependence on imports of agricultural products and

inputs, and ensuring the socio-economic development of rural areas are tasks that require the improvement of the existing management system and development concept [24].

Analysis of foreign experience shows that one of the agile forms of economic growth in the modern era is the cluster mechanism. A cluster system refers to the formation of mutual relationships between producers, resource suppliers, consumers, and traders associated with a value chain. In the agribusiness sector, clustering involves the consolidation of agricultural entities based on cooperative relationships related to the provision of resources for agriculture, production, processing, realization of products in domestic and foreign markets, and supply. An analysis of the organizational forms of agriculture in developed countries shows that agricultural entities operating in these countries do not operate separately but operate in a cooperative form. This expands their opportunities to obtain financial-credit resources, improve their material-technical base, and apply innovative scientific and technical achievements. In the agribusiness sector, the expansion of effective relations between agricultural product exporters, suppliers, processing enterprises and producers, the application of innovative technologies and digitalization of business processes, the expansion of cooperation between scientific research institutions and business entities, the facilitation of access to financial resources, the formation of important logistics infrastructure solving the issues is possible due to the formation of agricultural clusters. To ensure the sustainable formation and innovative development of agribusiness clusters in the post-conflict region of the Republic of Azerbaijan, it is necessary to achieve synergy through mutual relationships between the state, the private sector, and scientific research institutions. In addition, the formation of close mutual relations between all participants along the value chain, the deepening of integration relations on the development of agricultural production based on innovation, is considered as an important condition for ensuring the competitiveness of the agricultural sector [27].

Theoretical aspects of the formation and sustainability of agricultural clusters have been studied by many researchers. According to their opinions, it is possible to create an agricultural cluster model by achieving a synergy effect among the following elements:
- suppliers of production resources - agricultural institutes, vocational and higher education institutions, scientific research institutes, material-technical equipment enterprises, chemical industry engaged in the production of mineral fertilizers and pharmaceuticals;
- information, communication and logistics infrastructure;
- trade enterprises and sales channels;
- Agricultural production and food industry.

The formation of agricultural clusters, covering all technological processes in agribusiness value chain, creates opportunities for effective distribution of investments and the cooperative involvement of agricultural subjects characterized by low profitability. This, in turn, will contribute to the sustainability of production and the optimization of costs, in the context of global economic and technological changes, leading to an increase in efficiency [18].

Since clustering processes in the agricultural sector are created as a result of mutual relations between various organizational-economic, social, natural-climatic and technological factors, it covers all phases of agricultural production and includes vertical and horizontal forms of cooperation. The goals of organizing agricultural production on the basis of clustering include rationalization of production volume and expenses, obtaining maximum benefit at all stages of the value chain, and achieving the production of high-value and competitive products through innovative solutions [9].

In the modern period of Azerbaijan's economy, the existence of depressed regions that include Karabakh and Eastern Zangazur economic regions has made a balanced approach to the country's socio-economic development issues necessary. In this regard, the preparation of sustainable development programs for the post-conflict region and the realization of development strategies based on them have been considered as priority responsibilities by various government agencies in recent times. One of the main mechanisms for ensuring regional sustainable economic development is precisely the cluster approach [19].

Restoration the economic potential of the post-conflict region, directions for ensuring socio-economic development of the region, approved by the Decree of the President of the Republic of Azerbaijan dated February 2, 2021, are reflected in "Azerbaijan 2030: national priorities for socio-economic development". In addition, the strategic roadmap for the production and processing of agricultural products in Azerbaijan, which was approved by the President of the Republic of Azerbaijan's decree dated December 6, 2016, plays an important role in effectively implementing various priorities. In the strategic roadmap, the formation of farmer partnerships and the development of cooperation in agriculture, the development of public-private partnerships for the implementation of complex projects, strengthening the potential of rural areas in the socio-economic development policy, promoting and supporting the export of agricultural and processing industry products, and other national priorities are considered important for achieving effective results based on clustering both throughout Azerbaijan and especially in the post-conflict region.

Generally speaking, it is possible to achieve sustainable development in Azerbaijan's agribusiness sector based on clustering by improving the legal and regulatory framework for state support mechanisms and various aspects, applying favorable tax and finance-credit conditions, and developing a favorable business environment.

The sustainable formation and development of the agricultural sector based on clustering plays an important role in solving the specific problems of the post-conflict region and this field in general. The clustering process embodies interactive relationships among all participants in the agribusiness value chain that will be created in the post-conflict region. Creating agricultural clusters in the economic regions of Karabakh and Eastern Zangazur will create opportunities for regional economic growth, increased prosperity in rural areas, deepening the specialization in agricultural production, and increasing income for farmers.

The main model of clustering is the localization of traditional economic sectors and various agricultural subjects at different technological stages in the districts of Kalbajar, Lachin, Aghdam, Fuzuli, Jabrayil, Qubadli, and Zangilan, which are part of the economic regions of Karabakh and Eastern Zangazur. Localization will enable the reduction of economic costs and the creation of economic and trade networks due to the scale effect. The creation of agricultural clusters is based on the specialization of agricultural production and foodstuffs, which will lead to the improvement of the material and technical equipment base, the expansion of capital and resource-efficient technologies.

In addition, it will create opportunities for mutual beneficial cooperation between agricultural producers and other participants in the value chain, reducing various risks, stabilizing market connections, and increasing the income of agricultural subjects. The implementation of the clustering policy in the post-conflict region aims to create collaboration between large agricultural enterprises, scientific and educational institutions, and business incubation centers, resulting in increased competitiveness and innovation in the international market. It should be noted that competitiveness and innovation are the basis of the clustering policy [23].

Cluster formations in agriculture that combine fundamental principles, scientific research, and innovative products of high value create conditions for the effective development and competitive production of agribusiness in Azerbaijan's post-conflict region. They enable the implementation of new mechanisms and technologies, thus ensuring the development and sustainability of the regional economy, directing it towards completely new innovative development levels and providing a sustainable contribution for food security.
Concentration of the production process based on cooperation and integration, reconciliation of the interests of product manufacturers, processing, trade and infrastructure enterprises are the main factors determining the social-economic direction and effectiveness of these processes. These cooperative associations are preferred by agricultural producers because this form of cooperation fully reflects their interests and allows them to plan their production and income independently [16].
The implementation of clustering in the post-conflict region of the Republic of Azerbaijan is related to the trends of regional specialization. From this point of view, the analysis of the pre-

conflict agricultural potential of the Karabakh and Eastern Zangazur economic regions, the identification of traditional fields, and the determination of prospective production directions for each region will determine the main priority directions of the clustering process and the state's clustering policy for the future.

The following are the main characteristics of clustering in the post-conflict region of the Republic of Azerbaijan:
• integration of economic activities by geographical location;
• integration of various fields belonging to the same technological-production stage;
•  integration of fields belonging to various technological-production stages;
• development of cluster enterprises subjects mainly in the export-oriented direction;
• Formation of long-term cooperation among the integrated enterprise subjects in production, management, innovation, equipment, supply and other issues [15].

The creation of agricultural clusters with these features will provide the following advantages in terms of the regional economic situation:
• the deepening of mutual relations between state and business entities will be achieved in the context of solving various organizational, legal, and economic issues related to the activities of clusters;
• after the land reforms are carried out in the region, the consolidation of small landowners (with useful land for agriculture) will facilitate their access to various resources and information, leading to an increase in the effectiveness of their activities;
• opportunities for access to foreign markets will increase, and obstacles related to the supply of resources and access opportunities will be eliminated;
• The financial stability of agricultural cluster entities will be ensured by reducing production costs [21].

The creation of regional agricultural clusters in Karabakh and Eastern Zangazur, along with the synergy effect between educational and research institutions, supply and procurement enterprises, production and sales enterprises, will lead to the diversification, restructuring, and improvement of agribusiness in the region, and create favorable conditions for increasing both foreign and domestic investment capital in the country. The attraction of investments will ensure the sustainability of the regional economy by playing a multiplicative role in the development of both the country as a whole and the post-conflict region [6].

It should be note that natural climatic factors and the investigation of their current situation play a significant role in the restoration of the agricultural sector and the development of a cluster development model. During the 30-year conflict period, the agricultural land fund of the Republic of Azerbaijan have suffered significant damage (Table 2), which, in turn, has led to a decrease in agricultural production indicators and the volume of GDP. Therefore, taking into account the importance of biological factors in ensuring the sustainability of the agricultural sector, determining their current situation and recovery directions constitutes the initial stage of realizing the clustering policy in the agricultural sector.

**The volume of lost and abandoned agricultural lands of the occupied Karabakh region of the Republic of Azerbaijan in 1988-1993, hectares**
**Table 2**

| | The total volume of agricultural lands | sown areas | Fruit and berry fields | Vineyards | Forest areas |
|---|---|---|---|---|---|
| **Territories belonging to Nagorno-Karabakh (Khojaly,Khojavand, Shusha, Askaran, Hadrut, Aghdara, etc.)** | 220004 | 66748 | 1701 | 11211 | 147913 |
| **Aghdam** | 91800 | 33400 | 268 | 12483 | 850 |
| **Fizuli** | 85100 | 28700 | 8 | 6400 | 78 |
| **Jabrayil** | 60300 | 19300 | 48 | 6477 | 4039 |
| **Gubadli** | 35000 | 14300 | 96 | 977 | 13360 |
| **Zangilan** | 32800 | 7700 | 43 | 2391 | 13399 |
| **Kalbajar** | 48200 | 3800 | - | - | 32774 |
| **Lacin** | 75810 | 11600 | 124 | - | 33258 |
| **Specific weight of the Karabakh region in the Republic in %** | 13.8 | 10.5 | 3.2 | 22.0 | 27.8 |

**Source:** official data of the State Statistics Committee of the Republic of Azerbaijan [34].

As shown in the table, during the conflict period, the Karabakh region accounted for approximately 14% of the arable land volume useful for Azerbaijan's agriculture. This is characterized by a long-term loss of economic potential and, consequently, has a negative impact on the country's food security, raises dependence on imports, and harms national security issues. The analyzes conducted in 1988 on crops and livestock products from the occupied agricultural lands of the Karabakh region also prove thisSo, only in 1988, 14.3% or 179.4 thousand of the total grain crop produced in the republic, 31.5% of grapes or 324, 3 thousand, 6.3% of potato production or 2.35 thousand, 14.5% of meat production or 20.0 thousand tons, 17.1% of milk production or 75.5 thousand lost tons and caused serious difficulties in the balance of food security and had to import food products, especially food grain, from foreign countries. During the 30 years of the conflict in the Karabakh region, the food balance of the country has lost 5.4 million tons of cereal, 9.7 million tons of grape production, 70.5 thousand tons of potatoes, 600.0 thousand tons of meat, 2.27 million tons of milk, and the cotton and textile industry has lost 615.0 thousand tons of cotton and 25.39 thousand tons of cocoons.

At this stage of the research, it is necessary to analyze the agricultural potential of the districts that have entered the economic region of Karabakh and Eastern Zangazur.

The Agdam district, included in the Karabakh economic district which is the largest district in terms of population in the post-conflict region, was mainly engaged in agriculture as the natural climatic conditions were suitable for the agricultural sector. Looking at the structure of the useful land reserves of the district, the wide pastures and meadows (18,000 hectares) indicate high potential for animal husbandry. The pasture and meadow areas constituted only 0.8% of the corresponding land areas in the republic. According to official statistics, there were 34,000 horned cattle and 146,000 small horned animals in 1980, while the numbers increased to 44,000 horned cattle and 191,000 small-horned animals in 1988. From this point of view, the production indicators of meat, milk and eggs have shown a growing trend in the region. In 1988, milk production reached 24,000 tons, meat production reached 3.8 thousand tons, and egg production reached 19.2 million units.

In addition to the animal husbandry sector, the land-climate and geographical location of Agdam district also provided opportunities for the development of the crop sector. When analyzing the crop structure of 1988, it can be seen that cotton fields (50%) and tobacco fields (49%) were relatively widely spread. The grain fields in the district constituted only 1.4% of the corresponding areas in the country, while the cotton fields constituted 2.5% of the cotton fields in the country. According to official statistics in 1980, 28,000 tons of grain and 43,000 tons of cotton were produced in Agdam district, while in 1988, 30,000 tons of grain and 20,000 tons of cotton were produced.

In addition, there were also production opportunities for vegetables, melons, grapes and fruit products in the district. According to official data, over 1500 tons of vegetable products were produced from a total of 400 hectares of land in the 1980-1988 period, and 104,000 tons of grapes were produced from 21,000 hectares of land in 1985 [6].

Fizuli district is the second largest district in the post-conflict region according to its population, after Agdam district. It had more than 85,000 inhabitants. The natural and climatic conditions of the region are the main reasons why the majority of the population is engaged in agriculture. The 25,000 hectares of pasture and meadowlands in Fizuli district, which represent 1.1% of the country's corresponding total land area, are an indication of the widespread animal husbandry in the area. According to official data, the number of animals in the district was 30,000 cattle and 107,000 small horned animals in 1980, and 37,000 cattle and 149,000 small horned in 1988. The production of meat, milk, and eggs has also shown a positive trend. In 1980, the production of meat was 2,000 tons, milk was 12,000 tons, and eggs were 8 million. In 1988, the production of meat was 2.8 million tons, milk was 16,000 tons, and eggs were 12 million.

The fact that Fizuli region has rich natural resources has created a foundation for the development of plant growing, along with the animal husbandry sector. The analysis of the agricultural structure in 1980 shows that the cultivation of grain (77%) and cotton (21%) was extensive in the area. The grain fields here represented 2.4% of the country's total corresponding cultivated area, while the cotton fields represented 1.3%. According to official data, in 1980, 14.5 thousand tons of grain were produced on 12,000 hectares of land, and 13,000 tons of cotton were produced on 3,200 hectares of land. In 1985, 24.6 thousand tons of cotton were produced on 10,400 hectares of land, and in 1988, 31.9 thousand tons of grain were produced on 13,200 hectares of land. In addition, vegetable cultivation, viticulture, horticulture, and fruit cultivation have also developed in the district. More than 100 hectares of land produced a total of 713 tons of vegetables during the period 1980-1988, and in 1980, 76.7 million tons of grapes were produced on 18,000 hectares of land.

It should be noted that in the Fizuli and Aghdam regions, which are part of the Karabakh economic region, during the Soviet Union, all areas of animal husbandry were developed. As shown by statistical figures, the cultivation of grain and cotton has developed more in this region in the agricultural sector. Having a rich experience in the field of agriculture, restoring the agrarian sector against the background of the wealth of natural resources, solving a number of socio-economic problems of the country's economy, is aimed at ensuring the sustainable development of the country at the national and international level [6].

The Kalbajar region, which is located in the Eastern Zangazur economic region, is among the largest regions of Azerbaijan in terms of its territory. The Kalbajar region accounts for approximately 3-4% of the country's territory. The natural climate conditions and geographical location of the region, as well as the existence of 83,000 hectares of pasture and hayfields indicate that the population is mainly engaged in animal husbandry and that farming is specialized in the field of livestock. According to official statistics, the number of animals in Kalbajar was 33,000 cattle and 66,000 small horned cattle in 1980, while in 1988 the numbers were 31,000 cattle and 97,000 small horned cattle. Meat production was 28,900 tons in 1980, increasing to 35,800 tons in 1988, while milk production was 16,300 tons in 1988. During the period of the Soviet Union, production in all fields of animal husbandry in Kalbajar region developed with increasing dynamics.

The fertility of the soil, the richness of water resources, and other factors in Kalbajar have also created a favorable environment for the development of the agricultural sector, including the cultivation of crops. According to the analysis of the 1980 crop structure, tobacco fields (72%) and potato fields (19%) are the most widespread categories of fields. In addition, horticulture, vegetable gardening, forage production, and fruit cultivation have also developed in Kalbajar. For example, in 1980, 1,285 tons of tobacco were produced on 456 hectares, while in 1988, 896 tons of tobacco were produced on 660 hectares. In 1980, vegetables were planted on 13 hectares and gardens were planted on 42 hectares.

It should be noted that the application of innovative technologies, as well as the use of modern irrigation systems, intensive viticulture, and precise agricultural principles in Kalbajar during Azerbaijan's post-conflict period, taking into account the region's rich agricultural experience over the 1980s, will contribute to the revival of the agricultural sector and the increase of important macroeconomic indicators for both the region and the country, such as food security. It has been noted that the Qubadli district, in addition to its soil and climate conditions, including the large pasture and meadow areas (17.8 thousand hectares), is mainly engaged in animal husbandry. It should be noted that the pasture and meadow areas account for only 0.7% of the total available land in the country. According to official statistics, in 1980, there were 20 thousand head of cattle and 45 thousand head of small horned animal in the Kalbajar district. In 1988, these numbers increased to 22 thousand head of cattle and 30 thousand head of sheep. Consequently, there have been extensive opportunities for the development of meat, milk, eggs, and other animal products. For example, in 1980, the production of meat was 18.5 thousand tons, and in 1988, it was 22.8 thousand tons. Milk production was 7 thousand tons in 1980, and it increased to 12 thousand tons in 1988. In 1980, there were 3.7 million eggs produced, and in 1988, this number increased to 4.3 million.

The natural and climatic factors of the Qubadli district have also created opportunities for the development of the crop sector. Based on the crop structure of the district, grain (83%) and tobacco (14%) fields were dominated here. Grain fields in the district account for only 0.6% of the total grain fields in the country, while tobacco fields account for 3.6% of the total tobacco fields. In 1980, 1366 tons of tobacco were produced from 504 hectares, while in 1988, 2.1 thousand tons of tobacco were produced from 589 hectares. The production of grain had the following dynamics: in 1980, 5.2 thousand tons were produced from 5 thousand hectares, while in 1988, 6.7 thousand tons were produced from 3.4 thousand hectares. In addition to the expansion of these fields, the Qubadli district has also developed areas for vegetable gardening, horticulture, grape cultivation, and potato production. According to official statistics, in 1985, 6 thousand tons of grapes were produced, and between 1980-1988, a maximum of 141 tons of vegetable crops were produced from 50 hectares [6].

The natural climate factors and geographical relief of Jabrayil district have created high opportunities for the development of the agricultural sector, particularly for the development of crop farming. The construction of the Khudafarin water reservoir in the district has played a significant role in irrigating more than 7,000 hectares of land. Considering this fact, the restoration of this and other water reservoirs in modern times will play an important role in solving partially the problems related to irrigation in several districts. In addition, the presence of abundant rivers passing through the territory of the region has created favorable conditions for the widespread cultivation of annual and perennial plantings. In the crop sector, mainly grain growing and viticulture have developed here. In addition, there were opportunities for development of animal husbandry. In 1980, there were 19 thousand head of cattle and 89 thousand head of small horned animal, while in 1988, these numbers increased to 26 thousand and 114 thousand, respectively. The meat production was 2.7 thousand tons in 1980 and 4.0 thousand tons in 1988, the milk production was 8.7 thousand tons in 1980 and 14.0 thousand tons in 1988, and the egg production was 7.8 million in 1980 and 11.4 million in 1988. It should be noted that both crop production and animal husbandry sectors have shown an increasing trend in Jabrayil region. The crop production indicators in the agricultural sector were as follows: in 1980, 5.5 thousand tons of wheat were harvested from 6.5 thousand hectares of land, in 1985, 9.6 thousand tons were harvested from 5.4 thousand hectares, and in 1988, 12.1 thousand tons were harvested from 5.7 thousand hectares. Similarly, 2.0 thousand tons of barley were harvested from 2.6 thousand hectares of land in 1980, 6.2 thousand tons were harvested from 2.6 thousand hectares in 1985, and 7.9 thousand tons were harvested from 3.2 thousand hectares in 1988. In 1980, 9.4 thousand tons of cereals and legumes were harvested from 9.4 thousand hectares. In 1985, 15.8 thousand tons were obtained from 8.2 thousand hectares, and in 1988, 20.1 thousand tons were obtained from 9.0 thousand hectares. It should also be noted that viticulture has developed in Jabrayil district, with more than 20 grape varieties being grown there. In 1980, 6.3 thousand tons of grapes were harvested from 6.4 thousand hectares of land, while in 1985, 45.9 thousand tons were harvested from 8.4 thousand hectares, and in 1988, 41.9 thousand tons were harvested from 6.5 thousand hectares. In general, according to the statistical data of 1988, the total cultivated area of the district was 24.8 thousand hectares [10].

According to the natural climate conditions of Zangilan region, favorable opportunities have been created for the development of the crop production sector. The main areas in this region are vegetable growing, fruit growing, viticulture, tobacco growing, grain growing and cotton growing, providing ample opportunities for both annual and perennial crop planting The production of grain products consisted mainly of wheat, barley, cereals and legumes.

Thus, in 1980, 1.8 thousand tons of spring and autumn wheat were produced on 1.5 thousand hectares. In 1985, 3.1 thousand tons of wheat were produced from 1.5 thousand hectares, and in 1988, 3.8 thousand tons of wheat were produced from 1.6 thousand hectares. In 1980, 329 tons of autumn and spring barley were produced from 214 hectares, 600 tons from 225 hectares in 1985, and 829 tons from 346 hectares in 1988. In 1980, 2.2 thousand tons were produced from 1.8 thousand hectares, and in 1988, 4.6 thousand tons of cereals and grain legumes were produced from 1.9 thousand hectares. The production dynamics of tobacco and grape products are as follows: 1.2 thousand tons from 381 hectares in 1980, 1.2 thousand

tons from 359 hectares in 1988, 15.4 thousand tons from 4.5 thousand hectares in 1980, 16.3 tons from 2.4 thousand hectares in 1988. thousand tons of grapes were produced. It should be note that viticulture was considered the most important sector in terms of production in the region.

Overall, it should be noted that according to the statistical data of 1988, the total cultivated area of Zangilan district was 6.7 thousand hectares and 26.3 thousand tons of various crops were produced. Additionally, like in other districts, the geographical location of Zangilan district has created opportunities for the development of the animal husbandry sector. According to official data, in 1980, there were 17 thousand cattle and 51 thousand small horned cattle in Zangilan district, while in 1988, the number of cattle increased to 19 thousand and the number of small horned cattle decreased to 34 thousand. Accordingly, meat production in all enterprise categories was 1.7 thousand tons in 1980 and 1.9 thousand tons in 1988, milk production was 9.9 thousand tons in 1980 and 9.1 thousand tons in 1988, and egg production was 2.5 million in 1980 and 3.6 million in 1988.

It should be noted that the application of modern technologies in Zangilan region, implementation of intensification, will play an important role in the sustainable formation of crop and animal husbandry sectors in the modern era.

As the population of the Lachin district mostly lives in rural areas and due to the favorable natural and climatic conditions, the main occupation of the people was agriculture. The wide areas of pasture and arable lands in the district (74 thousand hectares), which accounts for 3.1% of the corresponding areas in the country, have made animal husbandry the main focus of the population's activities. According to official statistics, in 1980 the district had 45 thousand head of cattle and 213 thousand small horned cattle, and in 1988 43 thousand cattle, 224 thousand small horned cattle. The production of meat, milk, eggs and wool has shown a growth trend in all sectors of agriculture. Until 1988, all areas of animal husbandry in the Lachin district had shown a trend of increasing development [10].

The development of animal husbandry in Lachin did not hinder the development of crop production, on the contrary, the crop sectors were also economically developed. According to the analysis of the crop structure in 1988, it can be said that grain crops (96%) were more widely spread in the region. In addition, tobacco growing, vegetable farming, horticulture, potato production, and fruit growing have also developed in Lachin. According to official data, 2.0 thousand tons of grain were produced in 1980 from 3.3 thousand hectares and 3.0 thousand tons from 3.9 thousand hectares in 1988. In 1988, 142 tons of tobacco were produced on 83 hectares. According to the analysis of statistical data, while the maximum productivity of tobacco production in the country between 1980-1988 was 39.0 cents/ha, in Lachin, it was 19.3 cents/ha. During the mentioned years, tobacco production in Lachin accounted for 0.2% of the country's production. The analysis of statistical figures shows that Lachin has the potential for tobacco production. As for fruit and nut crops, there were 210 hectares of orchards in 1980, 241 hectares in 1985, and 175 hectares in 1988. During this period, a maximum of 74 tons of fruit and nut crops were harvested. In the economic region of East Zangazur, with animal husbandry being the main sector, there is potential for the development of all areas of crop cultivation.

Overall, it should be noted that crop production has developed mainly in the regular parts of Aghdam, Fizuli, Jabrayil, and Zangilan regions. High mountainous areas such as Kalbajar, Lachin, and Qubadli are considered to have more potential for the development of animal husbandry [6].

The necessity of restoring the agricultural sector is linked to the development of the reserve in agricultural production by the reduction of the share of imports and the expansion of export-oriented production, along with the formation of a high level of socio-economic well-being in rural areas. The development of these areas in the post-conflict region will be of particular importance in expanding the activities of food processing enterprises, which are important for

the country [3]. Restoring agricultural potential will contribute to ensuring food security, as noted in the table.

**Products characterized by a low level of self-sufficiency in agriculture and food processing industry of the Republic of Azerbaijan, in %.**
**Table 3**

| Product name | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|
| Cereal plants | 74.1 | 67.3 | 68.1 | 73.7 |
| Legumes | 72.0 | 76.1 | 60.3 | 56.4 |
| Potato | 90.8 | 87.8 | 90.6 | 88.8 |
| Milk and milk products | 86.7 | 86.3 | 83.5 | 84.8 |
| All types of meat and meat products | 82.7 | 82.5 | 84.5 | 86.4 |
| Cakes and sweets, other bakery products with added sweeteners | 78.0 | 75.9 | 76.8 | 77.1 |
| Pasta products | 28.7 | 24.7 | 42.3 | 47.2 |
| Plant oils | 34.3 | 33.6 | 34.8 | 73.2 |
| Canned fruits and vegetables | 90.4 | 90.4 | 90.9 | 90.1 |
| Butter | 71.3 | 69.5 | 62.7 | 66.7 |
| All kinds of cheeses | 87.9 | 87.7 | 88.1 | 86.3 |

**Source:** official data of the State Statistics Committee of the Republic of Azerbaijan [34].

As shown in the table, there has been a certain decline in self-sufficiency indicators for most products in 2021 compared to 2018. Therefore, reducing dependence on imports and developing long-term import substitution strategies are considered important obligations for the state's agricultural policy.

Investigating the pre-conflict agricultural potential of Azerbaijan's post-conflict region and identifying priority areas by district for the future will play an important role in ensuring the country's food independence. As a result of the research, the following areas have been identified as priorities for restoration in the post-conflict region:

1) *Cereal farming.* The products of this sector are considered the main source of food for both humans and animals. In most countries, the supply of cereal products is considered a globally important sector that determines the level of food security. This sector will also serve as a raw material base for pasta manufacturing facilities. In our country, wheat has a special weight among the imported products. For example, if in 2018, wheat worth $205 million was imported, in 2022 this figure increased more than twofold, amounting to $436 million. This, in turn, makes it necessary to study the development perspectives of this sector and take strategic steps to reduce the share of imports. Based on the research mentioned above, we can note that the development of cereal farming in Lachin, Aghdam, Fizuli, Jabrayil, and Zangilan districts is purposeful for the prospective period. In these regions, the formation of processing enterprises for the production of pasta products is considered appropriate from the point of view of the richness of the resource base.

2) *Horticulture, fruit and vegetable farming*. This sector is considered to be one of the important areas in Azerbaijan's agricultural sector and export potential. Thus, based on the export dynamics of agricultural products, in 2020, the export of fruit and vegetable products amounted to $607 million (with a special share in exports of 32.8%), and in 2022 it increased by 10% to $667 million. There have also been positive trends in production dynamics. Thus, the production volume of vegetable products increased by 20% relative to 2018 to 1,815.5 thousand tons in 2021, the production volume of melon crops increased by 14% relative to 2018 to 460 thousand tons in 2021, and the production volume of fruit increased by 19% relative to 2018 to 1,204.9 thousand tons in 2021. Despite the positive production and export dynamics, fruit and vegetable products are among the most imported products in the country. According to official statistical data, in 2018, the import value of fruit and vegetable products amounted to $164 million, while this figure increased by 43% in 2022 to $235 million. Taking these into account, the development of this sector is considered to be a priority issue in our country. In the post-conflict regions of our country, such as Agdam, Fizuli, Gubadli, Kalbajar and Lachin, the analysis of the pre-conflict period showed that fruit and vegetable and melon fields were widespread and the population had rich experience.

**3)** *Viticulture.* According to official statistics, the grape cultivation area in Azerbaijan amounted to 16,000 hectares in the years 2018-2021. Production indicators increased by 25% in 2021 compared to 2018, reaching 209.8 thousand tons, while the share of imports was 9.3% in 2018 and 10.3% in 2021. An analysis of the economic potential of Azerbaijan's post-conflict region reveals that the wide cultivation areas and increasing production dynamics of grape products in the Aghdam, Fizuli, Qubadli, Jabrayil, and Zangilan regions indicate the development opportunities for viticulture.

**4)** **Tobacco industry**. The development of this sector will lead to a decrease in the country's dependence on tobacco product imports. The total tobacco cultivation area in the country was 3.4 thousand hectares and the production volume was 6.31 thousand tons in 2018, while in 2021, the cultivation area was 3.1 thousand hectares and the production volume was 6.41 thousand tons. According to the statistical data of the State Customs Committee of the Republic of Azerbaijan, the import value of tobacco and tobacco products was 166 million US dollars in 2017, 165 million US dollars in 2018, 117 million US dollars in 2019, 85 million US dollars in 2020, 90 million US dollars in 2021, and is 97 million US dollars in 2022. As the numbers show, there has been a 42% decrease in import value compared was observed in 2022 to 2017. This is characterized by a positive dynamic in tobacco production. In addition, there is potential for the development of the tobacco industry in Azerbaijan's post-conflict region, including Qubadli, Zangilan, Kalbajar, and Lachin districts.

**5)** **Animal husbandry** is considered an important component of Azerbaijan's agricultural sector, and an increase in import indicators has been observed in this sector. In 2018, the import value of meat products amounted to 70 million US dollars, which increased by 20% in 2022, reaching 84 million US dollars. The import value of dairy products amounted to 12 million US dollars in 2018, which increased by 50% in 2022, reaching 18 million US dollars. The import value of butter increased by 56% from 2018 to 2022, reaching 108 million US dollars. The increase in the volume of imports of animal husbandry products poses certain risks in terms of ensuring food independence. In this regard, the development prospects of most areas of the country are available through the realization of new economic opportunities that Azerbaijan obtained in 2020. There are development opportunities for both dairy and meat livestock in all regions of Karabakh and Eastern Zangazur. In addition, there are opportunities to establish processing enterprises for production of yogurt, cheese, sour cream, butter, and other dairy products, as well as for all types of meat products in accordance with animal husbandry [30].

The realization of the potential opportunities and the development of the agricultural sector in Azerbaijan will ensure the country's economic sustainability by reducing import dependence and formating of export-oriented agricultural production.

As a result of the research on the specialization trends of agricultural potential and traditional areas in the post-conflict region of Azerbaijan, it is possible to create clusters in various fields in post-conflict regions. Taking into account the development potential of small and cattle breeding husbandry in the entire Karabakh region, it is possible to create clusters for the production and processing of dairy products in Aghdam, Fuzuli, Kalbajar, Lachin, Qubadli, Jabrayil, and Zangilan districts. The creation of such clusters aims to increase dairy production indicators, the production of new types of dairy products, and the replacement of imports strategy, and to develop production potential in the post-conflict region. Legal, financial, information, construction infrastructural spheres, manufacturers of preparations for the livestock and crop industries, agricultural equipment manufacturers, transportation services, and other service sectors, scientific research institutes, and laboratory centers will be included in regional dairy product clusters. In addition, there are extensive opportunities for creating clusters for meat production in the mentioned districts. Individual entrepreneurs and agricultural institutions specializing in meat production, meat processing enterprises, genetic-selection centers, and other service and equipment subjects will be included in these clusters. The creation of regional livestock clusters will serve to ensure the country's strategic food security. The creation of such clusters is appropriate for the Lachin, Aghdam, Fuzuli, Qubadli,

Jabrayil, and Zangilan districts. It is possible to create specialized clusters for vegetable and fruit products in all districts.

Generally, it should be noted that the creation of clusters in various fields, will create opportunities for the creation of new jobs in the economic regions of Karabakh and Eastern Zangazur, the reduction of import share in agriculture and food products in the country, the expansion of export opportunities, the formation of food production that will satisfy the various tastes, preferences, and demands of society, the improvement of the quality indicators of the produced goods, and generally, sustainable economic growth in the country [25].

The formation of agricultural clusters is related to the increasing in collaboration in various directions between cluster participants, the deepening of cooperation relationships, and the providing of mutual benefits. The existing relationships between the participants of regional agricultural clusters are characterized by the following features:

1) *Contribution by the government to cluster*: Improvement the state support mechanism (legal, regulatory, financial support forms) in order to achieve the development of clusters, improvement of their financial support, ensuring the durability of production and improvement of resource provision and forming a favorable investment environment in order to attract internal and external investments to the agricultural sector.

2) *Contribution by educational and research institutions:* the formation of competitive and high-quality human capital, provision stimulating training for the team's modern knowledge and skills in order to effectively manage the cluster, as well as making appropriate decisions on the main activity areas. Additionally, applying scientific approaches and making science-based decisions for solving any problem related to entrepreneurial activity and value chain.

3) *Contribution by business entities:* cooperation between various types of business activities such as technical and technological manufacturing enterprises, seed, fertilizer, medicine suppliers, vitamins, feed plants and other various equipment companies, large and medium-sized agricultural entities located at the same stage of the technological chain, individual entrepreneurs, agricultural enterprises, and various service-providing sectors and commercial enterprises, in order to ensure the sustainability of clusters.

4) *Contribution by financial institutions:* ensuring the financial sustainability of agricultural clusters by banks and non-bank credit organizations, international and national financial organizations in the agricultural clusters in post-conflict region of Azerbaijan, as well as improving issues of providing financial resources for the creation of developed technology parks [1].

It should be noted that it is advisable to achieve the formation of close cooperation between the participants of the clusters by concluding long-term contracts. In addition, ensuring long-term cooperation between participants requires the implementation of stimulating economic and legal measures. These measures include the application of tax, customs and insurance benefits.

Despite the necessary analysis of the Karabakh region and the analysis of directions for the formation of clusters, there is a lack of a single regional clustering policy in the country, and there is a need to prepare methodical support for the formation of a cluster strategy for regional development and a cluster development management mechanism. Clustering policy is considered as a system of state measures and mechanisms aimed at stimulating the creation of clusters in the priority areas of the regional economy and supporting existing clusters, as well as cluster members, which increase the competitiveness of the regional economy. The main task of the clustering policy is to ensure the competitiveness of Karabakh and Eastern Zangezur regional agribusiness, to expand the opportunities for innovation-oriented development and to optimize the mutual relations between all stakeholders for sustainable development and to increase the investment attractiveness of the region [16]. In order to

implement clustering policy in Karabakh and Eastern Zangezur economic regions, the formation of clustering strategy has an important role and includes the following main stages:
• comprehensive analysis of the clustering potential of the region;
• analysis of economic, organizational and resource opportunities for the purpose of development and implementation of the clustering strategy;
• justifying the cluster approach in ensuring sustainable development of the post-conflict region;
• determining the goals and objectives of clustering strategies in the development of the region;
• justification of the general concept of the clustering strategy in the development of the region;
• evaluation of clustering strategy efficiency. This evaluation may have a number of following criteria: increase in labor productivity, increase in the volume of fixed capital investment, increase in the number of agribusiness clusters and significant contribution to the GDP volume of the region [7].

In addition, it should be noted that the creation of regional clusters in the fields of animal husbandry or crop production in the Karabakh region, as well as the formation and implementation of the clustering strategy, should consist of the following levels:
**The first level** - organizations that act as interested parties in formulating strategies for cluster development in the region and providing direct or indirect management of regional clusters, including ministries, agencies, committees and international organizations.

**The second level** - interested parties of the region. Based on this, in the context of state-private sector cooperation, regional executive bodies, large agricultural and various industrial enterprises, institutions specializing in innovative development such as incubation, acceleration and innovation centers are included [28].

Note that the clustering strategy will play a role in ensuring regional development. The clustering strategy is a complex of measures to ensure the horizontal and vertical integration of business processes in the economic regions of Karabakh and Eastern Zangazur, which effectively realizes the regional agricultural potential. Therefore, regional agricultural clusters are considered as a type of economic relationship formation based on specialization in the regions of Karabakh and Eastern Zangazur, ensuring the high quality of agricultural products through the integration of appropriate production, management, information, innovation, and investment infrastructures.

To implement agricultural clustering in Karabakh and Eastern Zangazur, expanding trade relations, providing legal consultations, improving the legal and regulatory framework, and financial support are among the main mechanisms of state support.

In addition, in the implementation of healthy and fair competition within the framework of cooperative relations, elimination of administrative and other obstacles in order to ensure the stability of production and realization, achieving agricultural production according to international standards, ensuring compliance with international certification requirements and ensuring cluster-oriented development of the state is considered one of the priority issues facing the state [27].

Therefore, based on the conducted research, it can be noted that the implementation and development of the clustering policy in the economic regions of Karabakh and Eastern Zangazur is a crucial condition for the following measures to be implemented as a complex:
• development of methodology for the evaluation of cluster development;
• preparation of stimulating economic-institutional measures for the promotion of cluster creation;
• improvement of legal-normative base at the regional level for the purpose of cluster formation and development;
• improvement of information support issues for interested parties in the formation of the cluster development model, development of new methods and techniques;

- ensuring sustainable and continuous development of clusters by providing favorable social, political, international and economic environment.

Therefore, cluster policy is one of the priority directions for the socio-economic development of Azerbaijan's post-conflict region, and it constitutes an important mechanism for the development of the agricultural economy in the prospective period. The formation of agricultural clusters in the region will create opportunities for the implementation of innovative projects, development of infrastructure, and deepening cooperation in various areas between the public and private sectors [26].

It should be noted that the creation of agricultural clusters is related to the formation of an effective agro-value chain in this area. Both the development concept of clusters and the agro-value chain consist of issues related to intra-sectorial and inter-sectorial cooperation. The cluster development model, by completing the value chain concept, encompasses the strengthening of cooperation based on the mutual benefit and value creation of all participants in the production and technological processes of agricultural products.  In addition, the application of a cluster approach based on the formation of the value chain in the economic regions of Karabakh and Eastern Zangazur can be considered as a solution to existing problems by forming cooperation among all subjects involved in the sustainability of the agricultural sector. For example, entrepreneurs interested in developing their agribusinesses should prioritize strengthening cooperation with scientific research institutes that are considered as participants in the value chain, in order to address any technological problems in a scientifically based manner, such as the cultivation of new adaptive plant varieties in our country, the possibility of breeding and preserving new hybrid meat and dairy animals, and other technological problems.  Additionally, specialized food industry enterprises involved in the processing of agricultural products should prioritize collaboration with supplier farmers to improve the quality of their products to meet national and international standards. They should also prioritize partnerships with specialized entities in the production of agricultural and food products to provide specific logistics services for the delivery of their products to local, regional, and international markets [15].

Entrepreneurs engaged in agribusiness should consider strengthening partnerships with higher education institutions to improve training programs and ensure the transition of existing human capital to a higher quality stage of development. In addition, wholesale and retail trading entities should prioritize collaboration with agricultural and food producers to ensure the quality quantity indicators of their products aligns with market demand. The development of agricultural clusters requires a stable financial situation as a primary condition for the efficient functioning of all participants along the value chain.

Therefore, agribusiness enterprises should strengthen their partnerships with government, non-governmental, local, and foreign financial institutions to improve their financial support [17].

Generally, it should be noted that effective implementation of agricultural clustering in the post-conflict region of the Republic of Azerbaijan requires the cooperation or integration of the following key value chain participants:
- ***Provision of resources.*** This includes entities such as the government, banks and non-bank credit organizations, local and foreign investors, financial institutions, marketing research agencies, research centers, information resource providers such as development agency of SME, professional experts and educational centers that provide modern knowledge and skills, and institutions that provide material and technical resources including modern equipment, machinery and other technical means required to meet modern demands, and entities that provide agricultural inputs such as medicines, fertilizers, seeds, pesticides, and other technical support tools for the production of goods.

- ***Agricultural production***. This includes small, medium and large farming entities specializing in livestock and crop production, and those in the food industry. Individual farming entities, agricultural institutions, cooperatives, and clusters are all included here.

• **Processing of agricultural products.** This process involves the production of food products of various values and satisfying different needs, through the processing of agricultural products. The main entities included here are the food industry, processing enterprises, cooperatives, transnational corporations and various legal entities engaged in agricultural production.

• **Storage, packaging, logistics, and sales of agricultural products**. This includes primarily retail and wholesale businesses engaged in the sale of agricultural and food products. In most cases, these businesses also provide services such as packaging, storage, and transportation of goods to markets. These businesses carry out tasks such as market research, determination of optimal sales volume, identification of market tastes and preferences, and improvement of price and quality strategies [3].

In our country, the lack of trust between agricultural production entities at various stages of the technological process is the main obstacle to the effective implementation of agricultural clustering and value chain cooperation. In most cases, large companies align themselves from the position of competitors, and small enterprises have little legal and economic confidence in large enterprises. Therefore, the creation of an agricultural value chain can be expressed as the formation of a trust chain in terms of its nature. As a result, the provision of support for the goals of value chain participants, the provision of necessary economic and organizational support, the formation of mutual trust, and the overall provision of beneficial activities for society are all important issues of the social aspect of clustering policy.

Agricultural clustering can be a powerful tool for improving the productivity, competitiveness, and sustainability of the agricultural sector. By bringing together various actors along the value chain, clustering can facilitate knowledge and resource sharing, increase access to finance and markets, and foster collaboration and innovation. While the success of clustering initiatives depends on a range of factors such as institutional support, infrastructure development, and stakeholder engagement, the potential benefits are numerous. Therefore, policymakers, development practitioners, and other stakeholders should prioritize the promotion and facilitation of clustering activities in the agricultural sector to enhance the sector's economic, social, and environmental contributions [18].

## CONCLUSION

Clusterization is a promising strategy for enhancing the sustainable development, productivity, and competitiveness of agricultural production in the post-conflict region of the Republic of Azerbaijan. The formation of clusters brings together various interested parties, including farmers, processing enterprises, marketers, and support institutions, to collaborate in the production, processing, and marketing of agricultural products. By working together, these interested parties can pool their resources, share knowledge and experience, and gain access to markets that may otherwise be difficult to reach. In addition, clusterization can promote the adoption of modern and sustainable agricultural practices, facilitate innovation and technology transfer, and create potential opportunities [7].

The agricultural clusters created in the economic regions of Karabakh and Eastern Zangazur will enable the formation of regional competitiveness, the consolidation of small and medium-sized agricultural enterprises into specialized cooperatives with large agricultural enterprises, the increase in the efficiency of their production and sales activities, the acquisition of new market opportunities, and the expansion of possibilities for the application of innovative mutual technologies. Cluster institutions formed based on strong integration relations will enable more effective use of resources and technological transformation of production and sales activities Creating agricultural clusters in the Karabakh and Eastern Zangazur economic regions can help solve a number of problems. Firstly, it can increase efficiency and productivity by allowing small farmers to share resources and expertise. By working together, farmers can enter larger markets and negotiate better prices for their products, which can help reduce poverty and improve living conditions in rural areas.

Secondly, clustering can improve the quality of agricultural products. By working together, farmers can share their best practices, including more resilient and ecologically friendly cultivation methods. This can help reduce the use of harmful pesticides and fertilizers and improve the nutritional value of crops.

Thirdly, clustering can promote specialization and innovation, thus increasing the competitiveness of local agriculture. By working together, farmers can identify areas where they have a comparative advantage and focus their efforts on producing high-quality products in demand. This can help create a more sustainable agriculture sector that can better withstand external shocks like climate change and economic fluctuations.

In addition, clustering can contribute to social unity and community development in rural areas. By working together, farmers can build networks and relationships that strengthen trust and collaboration, particularly among women and marginalized groups. This can help reduce social isolation and promote greater social inclusivity.

Overall, the creation of agricultural clusters in the post-conflict region of the Republic of Azerbaijan will play an important role in solving problems in the food sector such as low productivity, lack of raw materials poor quality, lack of competitiveness failure to produce products according to international quality standards low levels of applied modern technologies and social isolation. By promoting collaboration and innovation among farmers, clustering can help create a more resilient and sustainable agriculture sector that contributes to broader development goals [11].

The benefits of clustering have been observed in many countries, including both developing and developed countries. It has been especially successful in agriculture where the value chain is often disjointed and inefficient. Clustering can aid in improving the movement of goods, services, and information, decreasing operational costs, and increasing bargaining power. Additionally, clustering can help develop rural areas and decrease poverty by generating employment opportunities, increasing income, and enhancing access to social services.

However, the effectiveness of clustering relies on several factors. Firstly, there should be a supportive policy and institutional environment that encourages clustering initiatives, offers incentives and services to interested parties, and ensures clusters are sustainable and effective. Secondly, there must be robust leadership and coordination mechanisms that facilitate participation of various actors, resolve conflicts, and promote the collective interests of clusters. Lastly, there must be a culture of trust and mutual respect among cluster members as it is critical for effective communication, collaboration, and joint action.

It should be noted that one of the factors hindering the development of the cluster-oriented agricultural sector is the lack of a favorable investment environment for attracting internal and external investments directed towards the continuous development of regional clusters, which creates conditions for the social-economic development of the entire Karabakh region. Therefore, it is necessary to create special economic zones with privileged conditions to stimulate the activities of local and foreign organizations. In general, the creation of regional agricultural clusters in Karabakh and Eastern Zangazur is one of the mutual forms of ensuring Azerbaijan's food security. Azerbaijan 2030, the National Priorities for Social and Economic Development of Azerbaijan, including the country's agricultural sector and the development of economic areas in the post-conflict region, has been established, and strategic goals have been identified for the country's economic reintegration. Thus, the implementation of agricultural clustering in Karabakh and Eastern Zangazur will contribute to the long-term sustainable development of the country.

The strategic concept for the socio-economic recovery of the post-conflict region of the Republic of Azerbaijan suggests that forming agricultural clusters can bring numerous benefits to the districts of Karabakh and Eastern Zangazur. These advantages include:
• *Economic growth:* By clustering agricultural activities, farmers, processing facilities, and other interested parties can come together to produce high-quality agricultural products and

increase their marketability, thereby promoting economic development in post-conflict regions of Azerbaijan.

• *Knowledge sharing:* Clustering agricultural activities can enable farmers and other stakeholders to exchange knowledge and expertise, leading to improved production techniques and efficiency.

• *Infrastructure development:* Clustering agricultural activities can provide opportunities for the development of infrastructure, such as irrigation systems, storage facilities, and transportation networks, which can enhance productivity and reduce transportation costs.

• *Product diversification:* Clustering agricultural activities can enable farmers to produce a wider range of products, reducing their dependence on a single crop or product and offering a more diverse range of products to local and international markets.

• *Increased competitiveness:* By collaborating in agricultural clusters, farmers can benefit from economies of scale, allowing them to compete more effectively with larger agricultural producers.

Overall, clustering in rural agriculture has great potential for transforming the agricultural sector and developing rural areas. Clustering agricultural activities appears to be a promising approach to promoting economic development and improving the livelihoods of farmers and other stakeholders in post-conflict regions of Azerbaijan. By bringing together various interested parties, clustering can foster innovation, increase productivity and competitiveness, and improve the well-being of farmers and rural communities. However, for clustering to be successful, it must be supported by appropriate policies, institutions, leadership, coordination, and social capital. Therefore, governments, development agencies, and other interested parties should invest in the development and expansion of clustering initiatives in the agricultural sector.

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