

PAPER • OPEN ACCESS

Current state of agriculture in the republic of Uzbekistan and the need for improving the efficiency of agro-clusters in the fruit and vegetable industry

To cite this article: Rashid Khakimov *et al* 2022 *IOP Conf. Ser.: Earth Environ. Sci.* **1043** 012043

View the [article online](#) for updates and enhancements.

You may also like

- [The Photoluminescence Properties of \$\text{CuInS}_2\$ and \$\text{AgInS}_2\$ Nanocrystals Synthesized in Aqueous Solutions](#)
L. Borkovska, A Romanyuk, V. Strelchuk et al.
- [Effect Infestation by *Sesamia cretica* L. Insect in some Characteristics of Growth for Varieties of Yellow Corn](#)
Mohammed Rakan Shallal, Abdul Jabar K. Ibrahim and Arqam Alomari
- [\(Invited\) A Functional Analysis of MEA Attributes and Properties for the Quality Control of Polymer Electrolyte Fuel Cells](#)
Xiaozi Yuan, Christine Nayoze-Coyne, Nima Shaigan et al.



ECS
The
Electrochemical
Society
Advancing solid state &
electrochemical science & technology

DISCOVER
how sustainability
intersects with
electrochemistry & solid
state science research

Current state of agriculture in the republic of Uzbekistan and the need for improving the efficiency of agro-clusters in the fruit and vegetable industry

Rashid Khakimov¹, Bayjanov Sarsengaliy³, Jahongir Rozikov², Murodjon Mamatkulov¹, Kuatbay Ismailov³ and Akmal Durmanov^{1,4,*}

¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Tashkent, Uzbekistan

²Tashkent State Agrarian University, Tashkent, Uzbekistan

³Karakalpak state university, Uzbekistan

⁴Branch of the Astrakhan State Technical University in the Tashkent region of the Republic of Uzbekistan

* E-mail: www.economy@tiim.uz

Abstract. The article provides a basis for the need to reform the agricultural sector of Uzbekistan in general, and its fruit and vegetable industry in particular. The main problems faced by the agricultural sector of Uzbekistan were the high costs of collection, transportation, storage, processing, packaging and certification when delivering products from the field to end-users. Limited processing and packaging capacity of farms, which produce the bulk of fruit and vegetable exports in Uzbekistan, leads to significant losses. It should be noted that the share of agro-clusters in the markets of developed countries (European Union, USA and Canada) exceeds 40%, and in Uzbekistan this direction is only developing. In this regard, the article used the following tasks: to study the theoretical basis for the creation of agro-clusters to analyze the current economic situation in the country, to make recommendations for the creation of agro-clusters in fruit and vegetable products. Industry of Uzbekistan.

1. Introduction

According to the State Statistics Committee of the Republic of Uzbekistan, the gross domestic product in 2018 amounted to 406,648.5 billion USD, including Agriculture, forestry and fisheries with 195,095.6 billion USD (47.98%). The share of "clean" agriculture in the GDP of the Republic amounted to 28.8% [1]. As of January 1, 2019, 3.7 million people were employed in agriculture, which is 27.2% of the total number of employees. It should be borne in mind that almost 50% of the population of the Republic live in rural areas [2]. Based on this, we can say that agriculture (along with industry) is the leading sector of the economy of Uzbekistan.

Moreover, as noted by the director of the Center for Economic Development (Tashkent), Y.B. Yusupov, on agriculture - "one of the most regulated sectors of the economy by the state." In his article for CABAR.asia, he writes that "the property rights of the main large agricultural producers and farmers are extremely poorly protected, the methods of regulating their activities are de facto taken from the Soviet past, the markets for many types of agricultural products and production resources and services for the sector are not developed" [3].



In general, almost all experts agree that the agricultural sector of the Republic is in desperate need of reform, as Y.B. Yusupov noted in his article, "Although Uzbekistan has already taken two years to take a course towards systemic economic reforms, there are almost no changes in agriculture" [4].

Since 2015, the transition to clustering the agricultural sector has begun in agriculture in Uzbekistan. However, the experience of the European Union, where agroclusters have been familiar for more than 40 years, is of little use in the Republic of Uzbekistan. Currently, agroclusters have been developed only in the leading industries of agriculture - cotton-growing [5]. However, and for the introduction of livestock and horticulture agroclusters can become virtually salvation. In this regard, we can talk about the relevance of the topic of this article, the main purpose of which is to summarize the intermediate results of the agrarian reform in terms of clustering horticulture in the Republic of Uzbekistan, identify the main problems in this area and develop proposals aimed at improving the efficiency of clusters.

Background Study The term "cluster" appeared in the economic literature of the early '90s. The twentieth-century and already at the end of the decade firmly entered the economic vocabulary, the concept began to be widely used and found its application in many sectors of the economy, including in the agricultural sector. [6].

The agro-cluster is a geographically localized, innovatively oriented integrated structure, organized on the basis of industrial and agricultural production, the purpose of which is to create an industrial basis for increasing the competitiveness and productivity of the food industry in the region, redistributing value-added and integrated use of the socio-economic potential of the territory [7].

In general, agro-cluster is a voluntary association of several agricultural enterprises located in one or closely located territories. The purpose of creating an agro-cluster is to combine the efforts of several enterprises to create a favorable market environment.

The creation of agricultural clusters is designed to protect small and medium-sized enterprises engaged in the production of agricultural products. It is easier to survive together, the creation of such associations is aimed at reducing the financial burden and increasing sales through the processing of products on the ground. Agricultural clusters can include not only agricultural producers, but also scientific associations, developers of new technologies, etc. The main symptom is agro-cluster focal points in a limited area for the implementation of joint activities.

As noted in the introduction, clusters appeared and began to develop in Europe and the USA. These were scientific and production associations operating in the field of industrial production [8]. A striking example of clusters is Arrl and Tesla. By combining several companies in their field, they were able to perform the complex industrial projects. The key to success was the presence of a strong scientific basis for new development and production dramatically, but the howl of products [9].

The success of cluster organization in IT and the industrial sector has given direction to the development of clusters in other sectors of the economy. The clusters were especially popular in agriculture, in which cooperation became possible not only for farms of one industry, but in for related areas.

Thanks to the creation of agro-clusters, small farmers were able to enter the largest regional markets. Agro-clusters have much more opportunities for the production of new types of products, in the financial sense, there is a benefit in the form of lower costs of production, logistics and advertising. It is impossible not to say about increasing the effectiveness of legal protection, because protecting the rights of many is easier than one.

According to leading economists, agro-clusters currently make up more than 20% of the European agricultural market [10]. The development of European agriculture historically predetermined the functioning of small and medium-sized farms. Their existence is regulated by law, because European governments are interested in the absence of rural unemployment. If large agricultural holdings come instead of small and medium-sized farms, this is fraught with the monopolization of local markets, higher prices for agricultural products and, consequently, a drop in the standard of living of the population.

Farmers in Europe have increased mobility. It consists of quick training in the management of modern technology, small farmers can more quickly diversify production and at the same time apply the latest modern technologies. Thanks to the erased dimensional system, thus, small and medium-sized agricultural producers can quickly master the production of new products. The European experience is also being adopted in other countries. This is also true for Uzbekistan, where the main task of agricultural clusters will be the processing of agricultural raw materials into finished products.

It should also be noted the positive experience of involving local authorities in the structure of the agro-cluster. This is not corruption, but the organization of agricultural production on the terms of a public-private partnership.

Thus, enterprises successfully combine the benefits of personal economic independence and the benefits of uniting the efforts of all market participants. European producers of honey, milk, wine, cheeses and other agricultural products work according to a similar scheme.

2. Material and Methods

Sources of data for the study were the data posted on the official website of the State Statistics Committee of the Republic of Uzbekistan (<https://stat.uz/ru/>), on the website of the Ministry of Agriculture of the Republic of Uzbekistan (<https://agro.uz/ru/>), on the analytical website of the countries of the Central Asian region (<https://cabar.asia/ru/>), etc.

The study considered time series in the Republic of Uzbekistan, an analysis of the economic and social situation in the Republic as a whole and in agriculture in particular.

3. Model

The existing agro-clusters in Europe, their organizational, functional and development conditions, were taken as a model.

4. Results and Discussion

In the late 80s, when Uzbekistan was still part of the USSR, agrarian reform was carried out, as a result of which there was some decollectivization - part of the collective and state farmlands was transferred to the personal use of the population. With the collapse of the Soviet Union, the former republics began to survive on their own, resulting in a gradual transition to market forms of management.

By the mid-1990s, all former collective farms and state farms were transformed into Shirkats - agricultural production cooperatives. Shirkats have become an intermediate organizational form for agricultural producers, a peculiar link in the transition from collective farms and state farms to farms. These farms have been already private in nature, but as before, their activities were strictly regulated by the state. [11].

Table 1. Distribution of agricultural lands of Uzbekistan by land users in 2018 (Thousand hectares)

Land user	Type of land		
	Arable land	Orchards and vineyards	Hayfields and pastures
Farms	3,472.9	296.0	1,481.3
Dekhkan farms	420.2	80.3	-
Other farms	142.2	10.3	1,9643.1
Total	4,035.3	385.6	21,124.4

Using the data of Table 1, we also considered the structure of farmland of the republic.

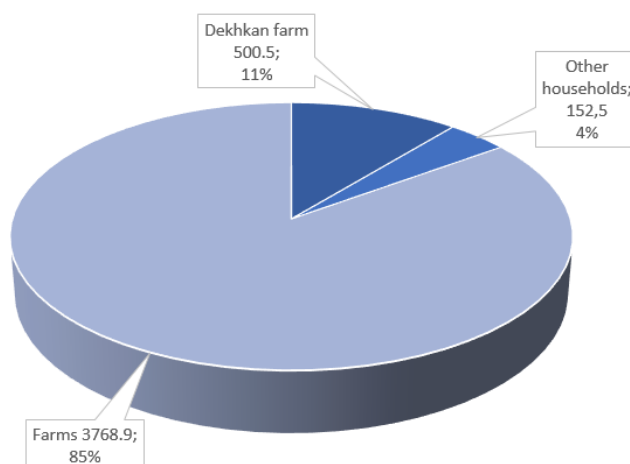


Figure 1. Distribution structure of farmland excluding hayfields and pastures (Thousand hectares /%).

Farms, with 85% of the land allocated for cultivating areas, orchards and vineyards (data from 2018), produced in 2018 only 27.3% of agricultural products. The larger proportion of 70.0% of the total agricultural production in 2018 accounted for by Dekhkan farms, which owned only 11% of the land allocated for cultivated areas, orchards and vineyards.

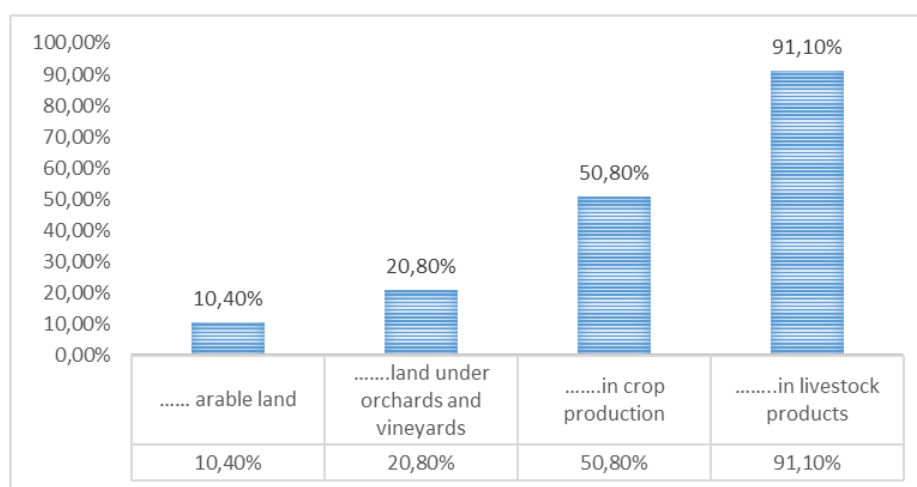


Figure. 2. The share of Dekhkan farms, 2018 (%) [12].

The key feature of the agricultural sector of Uzbekistan is that there are two crops, the production of which is carried out mainly for state needs - cotton and wheat. In this regard, the main problem of the agricultural sector of Uzbekistan has been identified is as the low level of the legal protection of farmers. The main thing is that farmers have neither the right nor the opportunity to use the land allocated for the cultivation of cotton and wheat for other purposes, regardless of whether they fulfill their planned tasks or not.

In recent years, there had been a slight reduction in land allocated for cotton, in favor of, above all, the production of fruits and vegetables. But at the same time, in 2018, cotton and wheat accounted for more than two-thirds of all land allocated to sown areas, orchards and vineyards. Planting of cotton and wheat in 2018 amounted to 82.2% of all sown area (without orchards and vineyards) of farms.

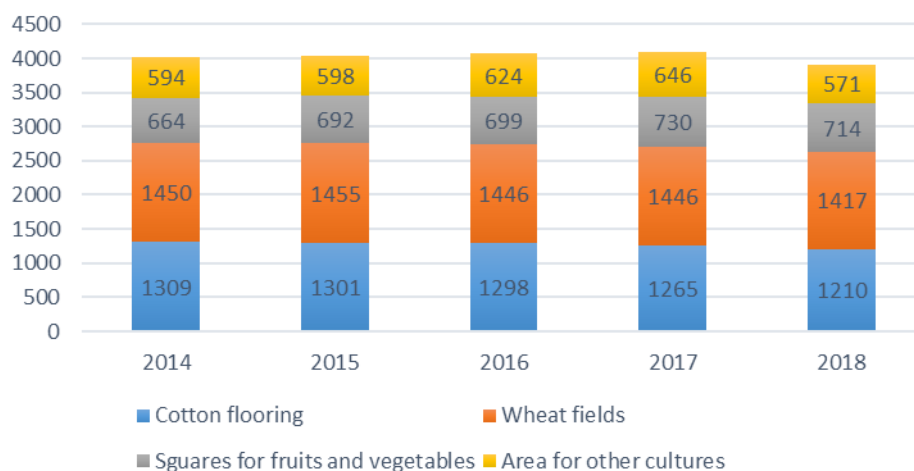


Figure 3. Distribution of agricultural land allocated to sown areas, orchards and vineyards (Thousand hectares) [13].

The existing mechanisms for the formation of the state order and the pricing system made the cultivation of cotton and wheat unprofitable for most farmers. An example is a difference between government procurement and domestic market prices for wheat. In some years, this difference exceeded 3 times [14].

The production of major agricultural products (except cotton), in accordance with official figures, was increasing from year to year. This was especially true of fruits and vegetables, along with the production of which its processing and export were growing.

Table 2. The volume of production of the main types of agricultural products, (Thousand tons) [14].

Culture	1992	2000	2010	2018	Growth at times, 1992-2018	Growth at times, 2010-2018
Wheat	964	3002	6657	6802	7.1	1.0
Raw cotton	4128	3002	3404	2900	0.7	0.9
Potatoes	365	731	1695	3015	8.3	1.8
Fruits and vegetables	3494	2645	6347	11434	3.3	1.8
Gourds	883	451	1183	2095	2.4	1.8

Despite a significant increase in agricultural production and export, the existing state order system and export regulation practice did not allow the formation of free agricultural markets [15].

In February 2020, a draft of government decree on monitoring the contract value of exported fruits and vegetables and textiles was released. The essence of the document was to prevent exporters from selling their products cheaper than the ceiling prices that will be set by the Ministry of Investment and Foreign Trade. That is, fears were confirmed and officials would again try to take control of the export of fruits and vegetables [16].

The existing system of state regulation of agriculture was formed under the objectives of accelerated industrialization in the framework of the import substitution policy implemented since 1996. The agrarian sector was given the role of a donor of massive financial injections into the development of the "strategic sectors" of the economy (as well as during the years of Stalin's industrialization). This policy failed, Uzbekistan did not become an industrial power, but significantly

lagged behind in its economic development. Systemic reforms launched in 2017 suggest a rejection of an inefficient economic model. However, the mechanisms of administrative regulation of the agricultural sector have not yet undergone significant changes [17] and the analysis of the situation in the agriculture of the Republic of Uzbekistan showed that one of the promising areas of development is to increase the efficiency of horticulture.

The development of horticulture is one of the main problems for the continuous provision of the population of the Republic with fruit and vegetable products, increasing the export ability of the industry and improving the quality indicators of products [18].

It is known that convenient climatic conditions in the republic make it possible to grow high-quality food products, in particular fruit and vegetable products. Also, the development of this industry creates the conditions for the continuous provision of the state population with high-quality food products, fresh fruit and vegetable crops, including the creation of conditions for achieving the ultimate goal - ensuring the financial stability of the farmer by increasing the volume of production, the demand for products on the international market and the export ability of the industry [19]. Therefore, as a result of economic reforms carried out by the government of the republic, wide opportunities were created for the development of this industry. In particular, by the Decree of the President dated November 28, 2008, on the program of measures to support enterprises of the real sector of the economy, ensuring their stable operation and increasing export potential and the Decree of the President dated January 26, 2009, No. PP-1047 on additional measures to expand production food products and saturation of the domestic market, make it possible to systematically solve the problems of improving the living standards of the population and providing them with food products [20].

This allows the Republic to quickly introduce the most modern technologies and agricultural techniques into production. The low cost of labor significantly reduces the cost of production with its high quality. As the results of the analysis have shown, in the period 2015 – 2018, sown areas of horticulture expanded from 137.7 thousand hectares to 159.8 thousand hectares, that is, increased by 133.5%. For example, in 2015, per capita production of products increased from 238.4 kg to 280.4 kg. If the level of security according to the medical criterion in 2016 was 180.5%, then in 2017 this indicator was 206.8%. Therefore, year-round ensuring of the uninterrupted production of fruit and vegetable products requires the development of processes for their processing and storage.

As the results of the analysis have shown, due to the effective use of modern technologies, hybrid seed varieties and agricultural technologies for growing products in greenhouses, farms and private entrepreneurs achieved better yield results than Dekhkan farms and household plots of the population. For example, the average tomato yield was 477.2 c / ha, 484.7 c / ha and cucumbers 433.3 c / ha while on farms this figure was 584.8 c / ha for tomato yield and 484.7 c / ha for cucumbers. In Dekhkan farms and home gardens in areas of the population, the average yields were 404.8 c / ha and 300.1 c / ha for tomatoes and cucumbers respectively, while for private entrepreneurs, 593.5 c / ha and 904.6 c / ha showed for tomatoes and cucumbers respectively.

Currently, much attention is paid to the development of modern technologies in the field of greenhouse horticulture both in Uzbekistan and around the world. The fact is that the problem is the urgent need for uninterrupted supply of the population with fresh agricultural products throughout the year. That is why the issues of expanding the construction of modern greenhouses throughout the republic and improving the organizational, economic and legal foundations for the development of territorial wholesale markets that have the necessary conditions for sale, which embody the market culture of the Uzbek people, are becoming increasingly important. An effective form of implementation of the task recognized in economically developed countries is the creation and development of agricultural clusters. From this point of view, the modern strategy and tactics of forming the economic potential of the agricultural sector requires rethinking the essence of the integration process and systematizing the directions of its development using the cluster approach. However, in our country, the features of clustering in food production [21].

The advantage of agricultural clusters is in innovations and growth in labor productivity in agricultural production compared to agricultural producers isolated by location. The agricultural enterprises included in the cluster benefit from the concentration of primary agricultural producers (including subsidiary, Dekhkan and farmers), as well as those who know the needs of buyers and have established relationships with them processing and trading enterprises in domestic and foreign markets. Therefore, the advantages of the cluster model, clustering mechanisms, the organizational model, as well as the structure of the agro-cluster of developed countries show that, by developing the industrialization of agriculture, they will create a stable food supply for the population of Uzbekistan.

5. Conclusion

Small and medium-sized agricultural entities, farmers and Dekhkan farms suffer from a lack of personnel, a lack of scientific and technical base, lack of funds and modern agricultural machinery, and limited sales markets.

The arrival of agro-clusters will allow these entities to finally unite and together defend their interests, focusing on the activities that they do best at all time, thereby forming a full-fledged production chain. By joining forces, farmers will be able to jointly maintain a technological base, a point for receiving and recording products and establish a joint sales market. By lowering their costs and increasing profitability, agricultural clusters will pull along many related industries.

This will reduce unemployment in the countryside, increase the production of deep processing products, increase investment in scientific research, reduce the number of depressed regions of the Republic of Uzbekistan, and reduce the dominance of large enterprises in rural areas.

An extremely important role in this process is played by local authorities. It should enter the structure of the agro-cluster and ensure maximum assistance to the enterprises of the structure by combining enterprises, investors and a cluster management center. As of March 1, 2020, 96 agricultural clusters were operating in Uzbekistan, which demonstrates great success in the development, quickly switching from the production of raw materials to the production of goods with a deeper level of processing. But the problem is that 73 out of 96 are cotton-textile clusters, i.e. There is a bias in the cluster structure in favor of one of the sectors of the agricultural sector.

It is important to show the investor the thoroughness of the approach so that he sees: this is a stable project; and money will not be buried in the ground. For the development of the cluster, it is necessary to create a reliable chain of three elements: manufacturers - local government - educational center. The stronger and more thoughtful this chain is, the more likely it is to get help and successfully develop a cluster project.

References

- [1] *Decree of the President of the Republic of Uzbekistan dated November 28, 2008 on "on The program of measures to support enterprises in the real sector of the economy, ensure their stable operation and increase export potential"*
- [2] *Resolution of the President of the Republic of Uzbekistan No. PP-1047 dated January 26, 2009, on "on Additional measures to expand the production of food products and saturate the domestic market"*
- [3] *Resolution of The President of the Republic of Uzbekistan 29.12. 2015 on " Measures for further reform and development of agriculture"*
- [4] *The strategy of development of agriculture of the Republic of Uzbekistan for 2020-2030 (Appendix N 1 to the Decree of the President of the Republic of Uzbekistan dated 10/23/2019 no. Up-5853)*
- [5] Zvolinsky V P, Zvolinskaya O V 2016 *Theoretical & Applied Problems of Agro-industry* **27(2)**
- [6] Kasymov G M, Makhmudov B D 2016 *Fundamentals of the national economy* Textbook (T., Mehnat)
- [7] Kleshevsky Yu N, Kudryashova I A, Kolevatova A V 2014 *Technique and technology of food production* **4(35)**

- [8] Murodov C H *Prospects for the development of agro-clusters in Uzbekistan: Report*
- [9] Porter E M 2005 *Competitive strategy: Techniques for analyzing industries and competitors* (Moscow: Alpina Business Books)
- [10] *Statistical Yearbook of Uzbekistan's regions: 1990-2018-Tashkent: Uzbekistan* (2019)
- [11] Aguilar-Gallegos N et al. 2018 *Agricultural Systems* **135** 122-132
- [12] Baranowski S et al. 2018 *Agriculture and Agricultural Science* **7** 12-20
- [13] Boneu F et al. 2016 *The impact evaluation of cluster development programs: Methods and practices* (Inter-American Development Bank)
- [14] Borisova O et al. 2018 *European research studies* **18(3)** 287
- [15] Durmanov A, Tulaboev M. Li et al. 2019 *International Conference on Information Science and Communications Technologies: Applications, Trends and Opportunities, ICISCT 2019. Institute of Electrical and Electronics Engineers Inc.* <https://doi.org/10.1109/ICISCT47635.2019.9011995>
- [16] Tkachenko S, Berezovska L, Protas O et al. 2019 *Journal of Entrepreneurship Education* **22(4)** 6
- [17] Umarov S R, Durmanov A S, Kilicheva F B et al. 2019 *International Journal of Supply Chain Management (IJSCM)* **8(5)**
- [18] Durmanov M Li, O. Khafizov et al., 2019 *International Conference on Information Science and Communications Technologies: Applications, Trends and Opportunities, ICISCT 2019. Institute of Electrical and Electronics Engineers Inc.* <https://doi.org/10.1109/ICISCT47635.2019.9011977>
- [19] Nurimbetov T, Umarov S, Khafizova Z et al. 2021 *Eastern-European Journal of Enterprise Technologies* **2(1(110))** 27–36 <https://doi.org/10.15587/1729-4061.2021.229184>
- [20] Durmanov S, Umarov K, Rakhimova et al. 2021 *Journal of Environmental Management and Tourism* **12(2)** 331–340 [https://doi.org/10.14505/jemt.v12.2\(50\).03](https://doi.org/10.14505/jemt.v12.2(50).03)
- [21] Iskandarov S 2015 *Modern trends in economics and management: a new look, Scientific journal on the topic: Economics and Business* **34** 149-154