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CLUSTERISATION STRATEGY OF UZBEKISTAN IN POST-PANDEMIC TRANSFORMATION: FORMATION AND DEVELOPMENT OF SCIENTIFIC– INNOVATIVE INFRASTRUCTURE FOR COTTON-TEXTILE CLUSTERS

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Abstract: *The article discusses issues on the formation of scientific-innovative infrastructure of the cotton-textile clusters of Uzbekistan in Post-Pandemic transformation. Author has developed proposals for the improvement of a scientific-innovative infrastructure, which will promote the development of integration between cluster members, increase production efficiency, commercialization of innovative projects, develop and implement programs for the development of cotton-textile clusters.*

Keywords: *cluster, cotton-textile cluster, post-pandemic period, scientific-innovative infrastructure, research centers.*

Introduction

Nowadays, there has been the most frequent use of the word "cluster", "clustering" in our daily lives, especially in the post-pandemic period. Despite the fact that this term is a new definition in the economy of Uzbekistan, foreign developed countries already have gained experience in organizing and developing economic clusters.

In the national economy of Uzbekistan, in several priority sectors, especially in the cotton industry, work is underway to organize production using this method – a group of enterprises united in a single technological chain, where science, education and production are mutually integrated. In this integration, primary raw materials will go through all the stages of processing in stages, added value is added and turned into high quality final products.

We know that a cluster is a technological chain that includes the entire process, starting from the primary processing of raw materials and ending with the production of finished products from it. It will help reduce costs in the cost of production for transportation costs, increase the production of finished products, which have a higher cost than raw materials.

The textile industry has huge potential for exports and employment. Therefore, at the initiative of the President, the cluster system has been fully implemented in the industry. Over the past three years, more than 23 trillion soums of prefer-

ential resources have been allocated to cotton and textile clusters. In addition, they invested almost 7 trillion soums of their own funds.

"If the whole system is properly organized on the basis of a scientific approach and modern technologies, the number of jobs can be increased to 1 million. In this regard, it is necessary to create opportunities to increase the yield of cotton on the basis of scientifically based seed production and agricultural technologies, to double the industry's exports through deep processing of raw materials. It is necessary to create scientific centers in each cluster, such as seed, soil and biological laboratories, as well as seed preparation workshops [1].

In this regard, an urgent issue of developing intersectoral relations in the enterprises of the cotton industry complex is the creation of scientific and innovative centers as part of clusters. The cotton-textile cluster became economically beneficial for market participants, it directly led to an increase in production capacity, which in turn contributed to an increase in production volume, improvement of economic relations and economic efficiency. Achieving the above goals is not feasible without the formation of an appropriate scientific and innovative infrastructure.

Research Methodology

The theoretical and methodological basis of the study are the fundamental concepts, scientific works of famous scientists dealing with the problems of industrial clustering, justified and presented in modern and classical literature, using sources of statistical data, including official data from the Ministry of Agriculture of the Republic of Uzbekistan, the Association of Cotton-Textile Clusters of the Republic of Uzbekistan and the State Committee on Statistics of the Republic of Uzbekistan, as well as individual regulatory documents, reports of relevant departments and organizations, the feasibility and scientific justification of the methods used, such as comparative, economic and statistical, grouping methods, expert assessments.

Literature Review

The tasks of formation and functioning, as well as the implementation of the cluster method in their management of the competitiveness of enterprises, are devoted to the works of foreign scientists of economic science such as: A. Marshall [2], M. Porter [3], A. Weber, S. Rosenfeld, P. Krugman, D. Solier, E. Dahmen [4] and others, as well as researchers from the CIS countries: A.N. Oleinik, N.V. Smorodinskaya [5], D.D. Katukov, E.G. Karpova [6], I.N. Kolosovsky, E.V. Ivanova [7], A.A. Nastin, Yu.V. Yaremenko, A. Shastitko and others.

The founders of the "cluster" theory and the most popular researchers in this area are A. Marshall and M. Porter. It is necessary to note the significant scientific works of these two scientists and economists in the emergence and development of the world concept of clusters.

Research on the promotion of the cluster approach in the industry of Uzbekistan was carried out by M.A. Rakhmatov [8], N.M. Makhmudov [9], S.M. Kasymov, S.S. Gulyamov, S. Salikhov, A. Sh. Bekmuradov [10], D. K. Akhmedov, Sh. , M.Tillyakhodzhaev, D.Kurbanova [11], D.Mirzakhalilova [12], G.Zakhidov [13], R.A.Gulyaev [14] and others.

Despite the fact that there is a wide economic literature devoted to the consideration of various aspects of economic clusters and their role in the development of the national economy, a number of problems still need further research. There are different opinions and definitions in the interpretation of its categorical concepts, there is a deviation in the correct organization of quantitative and qualitative constituent elements that prevent the transition of domestic enterprises to the global path of development.

The available studies, despite their great scientific and practical significance, still have a fragmentary feature, manifested in the consideration of one or more regulatory mechanisms, which confirms the need for further research in the field of state regulation of the agrarian sector of the economy, as well as in improving the scientific and methodological foundations for creating scientifically -innovative infrastructure in expanding inter-farm relations along the technological chain for the production of finished products.

Analyzes and results

It is known that scientific and production integration is the main factor in the development of economic entities, in particular cotton and textile clusters in a market economy. If in our republic the clustering of industry, including the cotton industry, is a relatively new practice, then in developed countries there is sufficient experience in the evolution of industrial clusters.

The data show that, until today, industrial clusters have been developed in many sectors

of the economy in almost all states, regardless of their level of economic development. In developed countries (EU, USA) they have become a natural step in the evolution of industrial production methods and in developing countries (China, India, Argentina) clusters are the main way to achieve world-class in the formation of various sectors of the economy and access to international markets.

According to the European Cluster Observatory [15], despite the post-pandemic period, in 2021 in 28 countries of Western and Eastern Europe there were 2301 clusters in various sectors of the economy, with a total of 42 million employees (Table 1). At the same time, 11.5% of them work in the agro-industrial complex, employing 4.5 million people.

Table 1

The number of active clusters in the EU countries identified by the European Cluster Observatory, for 2021

EU countries	Number of clusters in various industries, units.	Total number of employees in industry clusters, people.	The number of clusters in the agro-industrial complex, units.	The total number of employees in agro-industrial clusters, people.	The number of employees on average per 1 agro-industrial cluster, people.	The share of agro-industrial in the total volume of industry clusters, %	The number of research centers and universities promoting agriculture
Austria	107	957724	8	86740	10843	9,20	52
Belgium	75	780712	5	58739	11748	7,69	18
Bulgaria	48	790239	22	426874	19403	45,83	12
Great Britain	182	4730155	7	99007	14144	3,85	42
Hungary	59	773979	11	161543	14686	18,64	21
Germany	334	6693224	14	371204	26515	4,46	82
Greece	95	889570	36	299431	8318	45,00	51
Denmark	60	788929	3	91546	30515	10,00	24
Ireland	10	346641	1	42713	42713	10,00	2
Iceland	5	33844	1	4498	4498	20,00	4
Spain	151	4488405	35	644854	18424	23,18	41
Italy	234	6165837	13	384460	29574	5,56	41
Netherlands	103	1201176	12	96031	8003	14,46	24
Norway	45	330196	1	4535	4535	3,33	17
Poland	169	2117813	19	413242	21750	11,80	33
Portugal	69	1127298	3	42861	14287	6,25	13
Romania	92	2236096	16	610510	38157	17,39	16
Slovakia	45	429583	3	34296	11432	6,67	19
Finland	49	445534	4	29883	7471	11,76	30
France	195	4209316	20	501571	25079	12,12	54
Switzerland	62	790799	2	16673	8337	3,23	19
Sweden	65	722136	1	12256	12256	1,54	30
Total	2301	41857372	241	4518706	18750	11,47	625

Source: European Cluster Observatory, http://www.clusterobservatory.eu

As the data from Table 1 show, most clusters operate in the national economy of Germany, followed by Italy, Great Britain, France, Poland and Spain, that is, the largest economic and industrial countries. The same countries, as well as Romania, the Netherlands and Portugal, have an advantage over other countries in terms of the number of people working in these groups. However, in terms of the size of the clusters themselves, two countries – Spain and Lithuania – are leaders in the

number of employees, but this may also emphasize the low mechanization of labor. However, in terms of the total number of agro-industrial clusters, it leads among European countries, Greece and Spain, Bulgaria and France. However, in two European countries, Malta and Luxembourg, there are no agro-industrial clusters at all, since these two countries differ in the number of clusters in other sectors of the economy. At the same time, in terms of the share of agro-industrial clusters among other clusters, Bulgaria and Greece lead in significant differences from other European countries, as well as in the total number of people working in agricultural clusters. At the same time, Lithuania, Ireland, Romania and Denmark also have powerful agro-industrial groups with a large number of workers, but perhaps with insufficient equipment.

As for research centers and universities that promote agriculture, Germany also occupies a leading position. According to calculations, today the number of research centers and universities promoting agriculture in this country is about 82. There are about 1,000 state-funded research institutions operating in Germany. The backbone of the research landscape is formed by universities and four non-university research organizations. The largest research centers in Germany such as, the German Institute for Economic Research, CESifo, the Institute of German Economics, the Institute for Research on Small and Medium-sized Businesses, the Halle Institute for Economic Research, the ZEW – Center for European Economic Research, GFZ, the Society of Max Planck (MPG), Association named after Helmholtz Society. Fraunhofer, Leibniz, etc. are fruitfully integrated with the agro-industrial clusters of the country [15].

Currently, intensive work is underway to create research centers at the cotton and textile clusters of the republic. With 21 clusters, these centers will be engaged in the introduction of innovations and scientific and technical achievements in cotton growing, which is defined by the Cabinet of Ministers Resolution No. 397 dated 06/22/2020 "On measures for further improvement of cotton and textile production" [16].

According to the Resolution, the proposal of the Ministry of Agriculture of the Republic of Uzbekistan, the Association "Uztekstilprom", the Council of Ministers of the Republic of Karakalpakstan and Khakimiyats on the gradual establishment of research centers for the introduction of innovations, scientific achievements and innovations was approved.

Today, these research centers, in cooperation with higher educational and scientific institutions, conduct research and development work aimed at solving urgent problems in the development of cotton growing, the cultivation of raw cotton of world standards, the introduction of innovative technologies for the rational use of resources and increasing production. In addition, the Resolution approved a list of clusters under which scientific centers will be organized by the regions of the republic until 2023.

The main tasks of the research centers are:

• improvement of agricultural land reclamation, preservation and improvement of soil fertility, introduction of water-saving technologies and optimal crop rotation system;

• fertilizing cotton with new types of mineral and organic fertilizers using modern agricultural technologies, consulting and providing services to cotton growers on the use of biologically and environmentally safe combined methods of protecting cotton from diseases and pests;

• Organic and global G.A.P. take measures to grow raw cotton in accordance with the requirements of international standards and expand the geography of exports of finished products;

• development and implementation of short-term and long-term programs for the development of cotton and textile clusters;

• widespread use of digital technologies in the field, reduction of manual labor in the cultivation of raw cotton, increasing the level of mechanization of agrotechnical measures, establishing cooperation with higher and scientific institutions of domestic and foreign countries, participation in competitions of grant projects announced within the framework of state scientific and technical programs;

• participation in research and development of new high-yielding, precocious varieties and hybrids of cotton, expansion of their seed production;

• organization of demonstration training seminars for farm managers and agro-cluster specialists on the wide application of modern knowledge-intensive agricultural technologies.

Conclusions and recommendations

Today, an important issue in developing a

strategy for the development of cotton and textile clusters is the creation of a scientific-innovative infra-structure. "Innovation infrastructure – organizations that contribute to the implementation of innovative activities (innovation and technology centers, technology incubators, technology parks, educational and business centers and other specialized organizations" [17]

It is recommended to create scientific-innovative infrastructure (Figure 1), which will contribute to the development of integration between cluster participants, increase production efficiency, develop and implement programs for the development of cotton-textile clusters; commercialization of scientific developments.
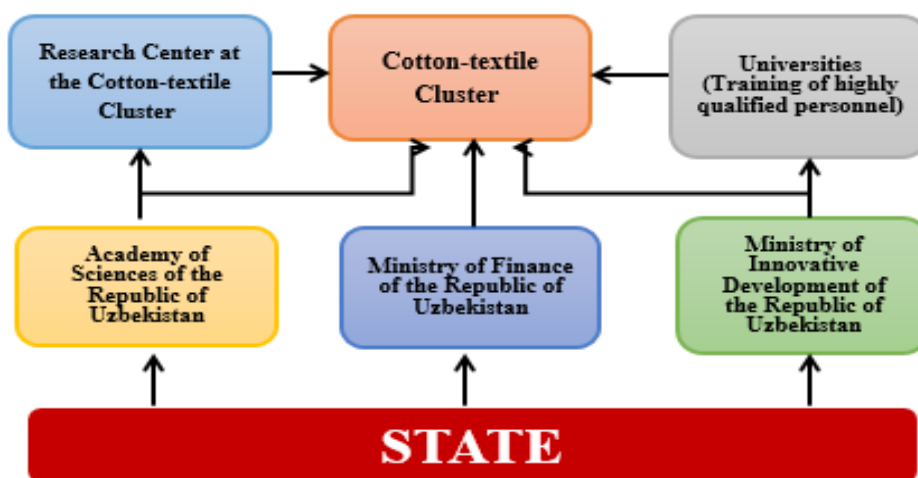

Figure 1. Scientific-innovative infrastructure of the cotton-textile cluster

Source: Developed by the author.

It is necessary to attract the participation of many organizations and departments in this integration. It should be noted that the state should be the initiator of the formation of the scientific and innovative infrastructure of the cotton-textile cluster.

Indeed, the clustering process in the advanced sectors of our economy is accelerating today. It's not for nothing, of course. Because at the heart of this renewal, implemented at the initiative of the head of our state, lies the noble goal of developing the social and economic sphere.

It should be noted that the formation of a class of advanced clusters serves the development of not only one industry or region, but also the economy of our country, increases its competitiveness. Each cluster should rely on innovation. This can be achieved by deepening the integration of production and science, higher education. In this regard, promising cooperation on cluster development is being established between the Association of Cotton and Textile Clusters of Uzbekistan and the Scientific Research Center "Scientific Foundations and Problems of Economic Development of Uzbekistan" at the Tashkent State University of Economics.

To date, an agreement has been reached between the Association, the University and the center on establishing cooperation relations in five areas with the involvement of foreign specialists. These are academic activities, research activities, international cooperation, innovation activities, digital technologies.

For example, if we consider academic activity, in the near future it is planned to open a joint faculty that will train highly qualified personnel for the industry, develop special programs for the development of issues of integration of production and the education system for bachelors and masters, create a textbook called "Cluster Economics" and perform many tasks, such as the formation of a set of educational and methodological materials. In addition, special training courses will be organized aimed at improving the skills of value chain logistics, building national brands, marketing and advertising, and export. In general, today steps have been set for another important cooperation in the direction of the prospects of the cluster system, which will soon begin to bring positive results.

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TO'QIMACHILIK SANOATI KORXONALARINING RIVOJLANTIRISH YO'NALISHLARI

Yodgorova Shaxnoza Xayridinovna –
Navoiy davlat konchilik va texnologiyalari
universiteti mustaqil tadqiqotchisi

Annotatsiya. Ushbu maqola O'zbekiston Respublikasida to'qimachilik sanoatini yanada rivolantirish undagi muammolar va yechimlari keltirib o'tilgan. Ayniqsa, mamlakatimizda to'qimachilik va ti-