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THE SOCIAL AND TECHNOLOGICAL ASPECTS OF ORGANIZING THE ACTIVITIES OF AGROCLUSTERS

Annotation: Based on the analysis of the need to organize the activities of agricultural clusters, the article defines its principles and methods.

The efficiency of agroclusters is inextricably linked with the economic activity of small farms, peasant farms, agricultural enterprises and organizations that are part of it. At the same time, improvement of the socio-economic condition of the regions where agroclusters are established will be achieved.

Keywords: *cluster, agrocluster, management, cluster management, competitiveness, global competitiveness, specialization, integration, food security, agriculture.*

Introduction. The effectiveness of agrocluster activities is closely related to the participation of small-scale farm enterprises, agricultural households, companies and organizations engaged in agricultural activities, as well as institutions involved in managing agricultural activities. In addition, agroclusters contribute to improving the socio-economic conditions of the regions where they are established. Organizing agrocluster activities in regions helps address various social issues, including ensuring the livelihood of the population, strengthening their income base, providing affordable and quality domestic food products, and ensuring national food security [1]. Particularly, utilizing cluster-oriented development in agriculture in most countries enhances the competitiveness of domestically produced goods at both the national and global levels [2]. Furthermore, analyzing the global practice of agricultural development reveals that the higher the number of agroclusters established in a country, the greater its agricultural competitiveness compared to other countries [3]. In the present day, any country's sustainable agricultural development, particularly in terms of ensuring national food security, requires a move towards cluster-oriented development in the agricultural sector.

The Level of Problem Organization. The Development stages of theoretical and methodological views on organizing and managing agrocluster activities, the phases of advancement in the scientific research related to the organization and management of agrocluster activities are reflected in the studies of economists such as R. Claudio, R.G. Cooper, M. Delgado, D. Doloreux, I. Laurs, G. Linden, and others who have contributed to the theoretical investigations of agrocluster management principles, enhancing the effectiveness of utilizing innovative projects in agrocluster management, and identifying influential factors.

Research Methods. The methods of research include grouping, systematic analysis, comparative study, induction and deduction, qualitative analysis, and quantitative analysis.

Analysis and Findings. The activity of agroclusters involves the participation of small-scale farm enterprises, agricultural households, companies and organizations engaged in agricultural activities, as well as institutions involved in managing agricultural activities. Together with water, agroclusters contribute to improving the socio-economic conditions of organized areas. Through the establishment of agroclusters in regions, various social issues are addressed, including ensuring community cohesion, strengthening their income base, and providing the country's population with affordable and high-quality food products, thereby enhancing national food

security [4]. In particular, in many countries, utilizing agroclusters in the development of agriculture can increase the competitiveness of domestically produced goods on both national and global scales [5]. Moreover, according to the analysis of global practices in agricultural development, the higher the number of agroclusters established in a country, the more competitive its agricultural sector becomes on a global level compared to other nations [6].

In the present day, in any country, the sustainable development of the agricultural sector, particularly for ensuring national food security, demands a shift towards cluster-based integration in the agrarian field. The analysis of global practices in forming agroclusters within rural areas highlights the successful resolution of socio-economic issues as a result of these initiatives. Notably, these initiatives contribute to enhancing socio-economic and ecological sustainability in rural areas, promoting the innovative development path for agriculture, bolstering the implementation of scientific research, creating new employment opportunities, and strengthening the income base of the population. Consequently, positive trends, such as the assurance of national food security, are observed in countries that have integrated agroclusters into their agricultural practices.

Another significant aspect of cluster-based integration in agricultural development is the significant enhancement of product production and their processing efficiency. This, in turn, contributes to the quality improvement of the produced goods.

In this context, it's worth mentioning that in our country, cluster-based integration facilitates the resolution of various existing issues through the formation of economic entities specializing in agricultural activities. For instance:

1. Many of our country's agricultural entities are engaged in fruit and vegetable cultivation as a part of small-scale farming, which doesn't fully meet the quality standards for the produced and processed goods. Based on the analysis of the global practice of agrocluster development, when economic entities engaged in agricultural activities within a specific region join forces, their activities are enhanced collectively, resulting in an integrated agrocluster. This integration ensures the stability of their activities and fosters efficient production. Simultaneously, the quality of the produced goods is improved.

2. During the harvest season, particularly for perishable goods, there is a lack of storage facilities within the agricultural sector, leading to the inability to store products for an extended period. As a result, a significant portion of the harvest is directed to markets for sale, which often leads to a rapid decline in the prices of fruits and vegetables due to oversupply. The lack of appropriate storage conditions further exacerbates this situation. Therefore, agroclusters can effectively address this issue by establishing large storage facilities, thereby enhancing the storage capabilities of agricultural products for a longer duration. Consequently, agroclusters contribute to reducing the economic losses of agricultural entities engaged in production.

3. The constraints on the opportunities for value-added processing of products pose a challenge. Especially in conditions where the conditions for the processing and value addition of products are not fully met, agroclusters encounter limitations. This scenario also adversely impacts the capitalization of agroclusters.

4. Agricultural entities in small-scale rural areas also face limitations in transportation options for delivering processed products. As a result, they often incur additional costs for transporting processed products. This, in turn, impacts their competitiveness. Additionally, the inadequate quality of transportation can lead to product deterioration during transportation.

5. Furthermore, a majority of the country's population resides in rural areas. Consequently, rural areas experience higher rates of unemployment, and wages are comparatively lower. The above-mentioned conditions necessitate the utilization of cluster-based integration within the agricultural sector, which can effectively address various socio-economic issues. This includes increasing the participation of rural areas in external markets and enhancing their presence.

The outlined conditions illustrate that the ongoing socio-economic challenges within our country's agricultural sector can be addressed by integrating the agrocluster activity. This approach not only promotes the efficient use of resources but also ensures the development of the Republic's

regions. Thus, based on economic literature, managing agrocluster activities varies among different economic subjects engaged in agricultural activities. These differences include:

- The ability of agroclusters to enhance the participation of rural agricultural entities in external markets.
- The successful utilization of agrocluster activities in the development of specific rural regions.
- The integration of rural agricultural entities into agroclusters through the application of advantages created by the state and other entities, thereby increasing their involvement.
- Creating an effective internal supply chain among agrocluster members [7].



Figure 1. Types of Agrocluster Formation [8]

Michael Porter's perspective on shaping cluster management distinguishes two fundamental forms of integration, namely specialization-based and regional (point) clusters (see Figure 1). This differentiation, prevalent in the contemporary world, is described in the following manner:

- Specialization-based agroclusters are composed of agricultural entities, companies, and organizations that engage in the production, processing, and utilization of agricultural products through reprocessing. This type of agrocluster involves vertical and horizontal cooperation among economic subjects to effectively harness mutually beneficial relationships. Through the development of such agroclusters, countries elevate their involvement in the global value chain, thereby enhancing the competitiveness of their products.

- Regional (or point) agroclusters connect agricultural subjects, businesses, and organizations that are geographically proximate and form a collaborative group focused on maintaining sustainable socio-economic relationships within the agricultural sector. This type of agrocluster contributes to the establishment of national value chains and enhances the potential for internal market development [9].

Global practice reveals that agroclusters established in the territories of the states of Louisiana, Oklahoma, and Washington in the USA are among the largest in the world. For instance, California is renowned world wide for its wine production cluster. The management of agroclusters in the USA is characterized by the significant focus on producing high-tech agricultural products. Similar agrocluster management practices are evident in European Union countries such as the United Kingdom, Germany, France, Italy, the Netherlands, Switzerland, Denmark, and Bulgaria. Moreover, recent years have seen improvements in the management of agrocluster activities in countries such as China, Japan, Singapore, and other Southeast Asian countries, as they align their practices with those of the USA and Europe [10].

Analysis indicates that forming agroclusters provides a viable opportunity for effectively utilizing the potential for the agricultural sector's development in the country. Considering the characteristics of socio-economic development in the country, it can be concluded that increasing the efficiency of agrocluster activities requires prioritizing its management in a lignment with the peculiarities of the national context. In economic literature, understanding the methods for managing agrocluster activities is of paramount importance when selecting approaches for effective governance. The strategic approaches to agrocluster formation in agriculture, as high lighted in Figure 2, exhibit differences between them.

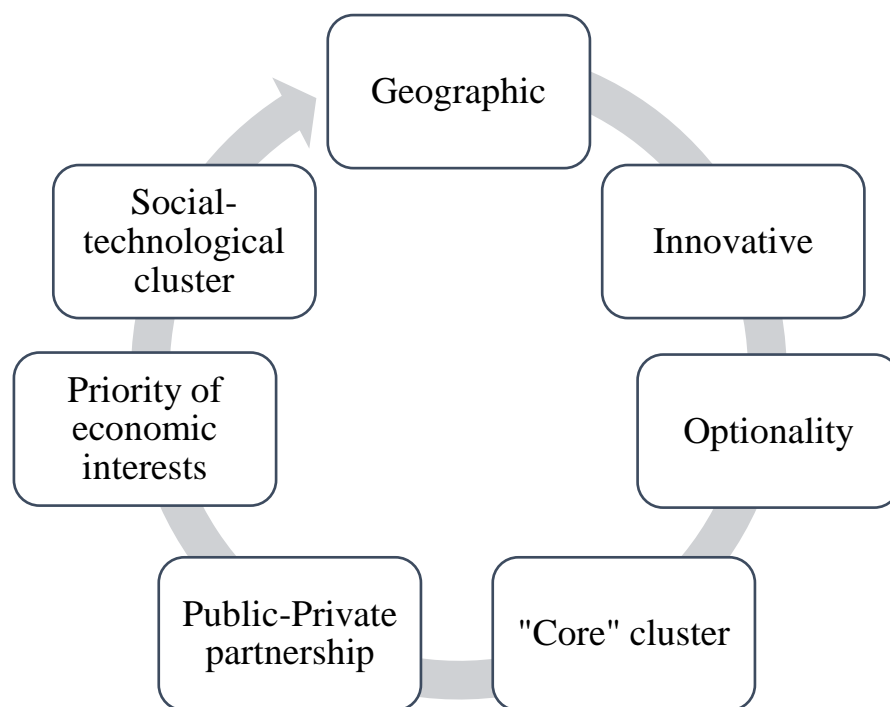


Figure 2. Methods of organizing agroclusters' activities [11]

In the formation of agroclusters, many countries utilize geographical advantages. This approach is characterized by the utilization of geographical advantages for the enhancement of the agricultural sector's development capability. This concept is a key component of regional development policies for agroclusters. Furthermore, the development of geographic clusters is based on scientific theories focused on advancing such clusters. These clusters are characterized by effective strategies for agricultural production and management, including technological advancements, boosting the innovation of regional agriculture, and improving the relevant logistical services for the production, storage, and distribution of goods.

In the establishment of agroclusters, the application of innovative strategies is essential. This includes the integration of fifth-generation innovation management models, which contribute to the advancement of innovation on a global scale. Moreover, the integration of agricultural activities among entities within the agrocluster leads to specialization in innovation management. The cooperation and extension of innovation are fostered, leading to a competitive advantage in the marketplace. Additionally, the adoption of innovative measures in agroclusters enhances decision-making processes, and innovation becomes a critical asset in this context.

The implementation of this strategy has been particularly effective in rapidly developing countries, contributing to their economic growth. International attention is drawn to the Global Innovation Index data produced by the international intellectual property organization. According to the analysis, countries that possess a strong innovation management framework within their agrocluster activities demonstrate their capacity to adopt and extend innovations, both nationally and globally. For example, countries such as the United States, Hong Kong (China), Israel, and Singapore are ranked highly in the Global Innovation Index 2021 for their proficiency in improving and expanding innovations in various sectors of their economies. This reinforces the significance of innovation-oriented agrocluster activities in these countries.

Table1

**Countries Leading in Enhancing and Extending
Innovations Worldwide [12]**

Countries	Global Innovation Index – 2020			Global Innovation Index – 2021			Global Ranking in Innovation Activity	
	Adoption of innovations	Transfer of innovations	Total	Adoption of innovations	Transfer of innovations	Total	2020	2021
USA	3	6	9	6	7	13	2	1
Hon Kong (China)	7	5	12	7	4	11	1	2
Israel	6	2	8	6	4	10	3	3
Singapore	5	1	6	6	4	10	7	4
China	3	5	8	3	6	9	5	5
Republic of Korea	3	2	5	5	4	9	10	6
Luxemburg	6	2	8	6	2	8	4	7
Switzerland	2	4	6	2	4	6	9	8
Japan	3	3	6	2	4	6	8	9

The formation of agroclusters' activities is also considered in terms of innovation. This approach highlights the importance of innovative cooperation among agricultural subjects within the framework of agrocluster activities to achieve higher economic efficiency. The focus is placed on the integration of higher-level collaborations, deep cooperation among rural agricultural entities, aiming to enhance their economic performance. These enhancements are pursued through the integration of innovative practices to attain greater economic success.

Another concept in agrocluster formation is the "core" cluster. In some economic studies, it is referred to as the "Central" cluster. This type of cluster establishes an agrocluster by bringing together weaker agricultural entities from various sectors to strengthen competition and foster synergies. This approach enhances economic benefits for the core firm while also promoting collaboration and competitiveness among its constituent participants.

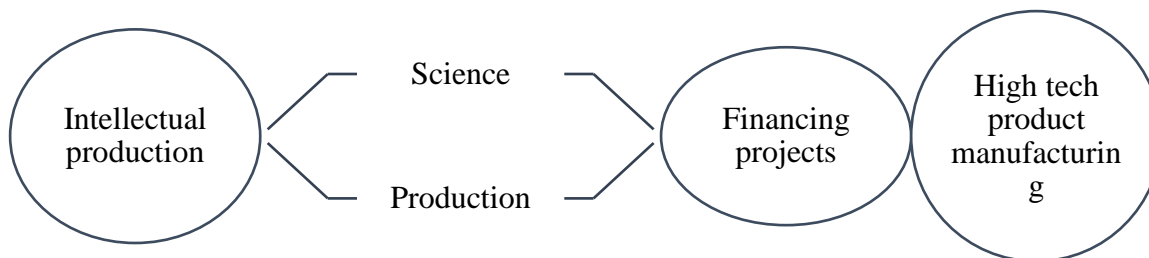
The concept of public-private partnership is not confined solely to agroclusters today; it is widely employed in various sectors of the economy. This approach involves the creation of favorable conditions by the government for agrocluster development. It requires the establishment of certain criteria for entering the agrocluster and participating in its activities, such as setting specific requirements for enhancing the activities of small, medium, and large rural agricultural entities. In recent years, governments have been focusing on financial support for agroclusters, including measures like tax incentives, foreign investment facilitation under government guarantees, and subsidies. These measures have significantly contributed to enhancing the effectiveness of managing agrocluster activities.

The concept of economic benefits generation primarily focuses on enhancing the value-added products that contribute to both domestic and international markets. This objective underscores the need for agrocluster participants to collaborate on enhancing the production, processing, and reprocessing of agricultural products through the establishment of integrated systems with binding obligations. This form of management guides agrocluster participants in achieving a higher value for agricultural products in both internal and external markets.

The socio-technological cluster concept plays a significant role in modern agrocluster formation. It emphasizes the comprehensive use of technological advancements within agrocluster activities, significantly enhancing innovative management. In this context, it facilitates the

establishment of mechanisms to integrate scientific and technological advancements into agrocluster activities.

Please note that while I've provided translations for the key concepts, the text remains quite technical, and some terminology might require further context or specific domain knowledge to fully understand the nuances.



Figure

3. Mechanism for implementing the socio-technological cluster concept in agrocluster activities [13].

The establishment of agroclusters contributes to the enhancement of the quality indicators of the produced goods through the result of the mutual integration of the economic real sector and the fields of science, education services, and social spheres in the context of the socio-technological cluster approach. This simultaneously provides an opportunity to reduce the cost of products and improve their quality. This aligns with the state's social policy objectives, such as ensuring the population's access to affordable and quality food products, ensuring food security, and strengthening the domestic food market. As a result, it enables effective solutions for tasks such as increasing internal consumption. Because of these reasons, this approach is evaluated as a socio-technological cluster in the economic literature.

Conclusion. The formation of agro-clusters and their impact on the real sector of the economy and the integration of social and technological aspects of science and education in the social sphere enhance the quality indicators of products produced as a result of these inter connections. This consequently offers the potential to reduce the cost of production while enhancing the quality of the products. This aligns with the goals of the state social policy, which aims to provide the population with affordable and high-quality domestically produced food products, ensuring the safety of national food reserves, and stimulating the domestic food market. Thus, these initiatives contribute to solving crucial tasks.

In conclusion, it is noteworthy that today, our country is implementing reforms aimed at the development of smart agriculture. Given these circumstances, the utilization of the social-technological and innovative agro-cluster approaches in the formation of agro-clusters plays a significant role in achieving productive results. The necessity of forming agro-clusters and studying their mechanisms of management led to the following scientific conclusions:

- The formation of agro-clusters contributes to the effective use of the potential for the development of the country's agricultural sector.
- The management of agro-cluster activities focuses on competitive production of agricultural products.
- The enhancement of agro-cluster management contributes to the social-technological and innovative formation.
- Effective decision-making within agro-cluster management necessitates mutual benefits for all participants.
- The harmonization of cooperation relationships among agricultural entities entering the agro-cluster structure corresponds to the full compatibility of interests in the integration partnership.
- Managing agro-clusters must fully exploit the advantages and opportunities created by the state to increase global competitiveness through identifying and removing relevant barriers.

In general, in the coming years, the development of agro-clusters in our country will contribute to effectively addressing the socio-economic issues that have been expected for many years in the development of agriculture. In this regard, our country has the potential to become one of the leading agrarian-industrial states in the world that successfully utilizes the potential of the agricultural-industrial sector in the context of the full utilization of the agricultural cluster activity.

In summary, the research conducted by Kulov A.R., Kundius V.A., Glotko A., and Lisin M.N., including their respective publications mentioned earlier, serves as a basis for analyzing the establishment of agro-clusters and their economic significance.

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