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	JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

SOI: 1.1/TAS DOI: 10.15863/TAS

International Scientific Journal

Theoretical & Applied Science

p-ISSN: 2308-4944 (print) **e-ISSN:** 2409-0085 (online)

Year: 2023 **Issue:** 09 **Volume:** 125

Published: 30.09.2023 **http://T-Science.org**

Issue Article

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RELEVANCE OF THE CLUSTER MOVEMENT IN THE INNOVATIVE DEVELOPMENT OF AGRICULTURE

Abstract*: This article examines the relevance of the cluster movement and its significance in the innovative development of the agricultural network of our country. Foreign experience of the cluster movement in agriculture, the advantages of its use, scientific and practical proposals for introducing innovations into the network have been developed.*

Key words*: agriculture, clustering, food security, pricing policy, introduction of innovative technologies, production, competition.*

Language*: English*

Citation: Safarova, D. B. (2023). Relevance of the cluster movement in the innovative development of agriculture. *ISJ Theoretical & Applied Science, 09 (125),* 369-374.

Soi: http://s-o-i.org/1.1/TAS-09-125-42 ***Doi***: crossref https://dx.doi.org/10.15863/TAS.2023.09.125.42

Scopus ASCC*: 1100.*

Introduction

It is known that reforms implemented in the field of agriculture in recent years do not leave any of us indifferent. In the first years of independence, special attention was paid to the emergence of farms and the creation of legal bases for their activities. In this regard, separate legal documents were adopted, and legal mechanisms for resolving conflicting relations arising in the field were created [1], [2].

However, the existence of problems related to the reforms implemented in agriculture is the reason for the determination of different directions of legal regulation by the state. For this reason, special attention is being paid to establishing the activity of clusters in agriculture, giving up planning-administrative resources.

At the initial stage of cluster formation, the most difficult thing is to reach an agreement among entrepreneurs on the formation of its assets. Factors unifying the economic interests of creating a cluster are: 1) implementation of a single price policy in the commodity market; 2) expansion of production and services by its participants; 3) implementation of a unified marketing policy; 4) introduction of innovative technologies - integration and cooperation in the production of products and their sale in commodity markets.

It should be noted that the growth and spread of agricultural entrepreneurship in economically developing countries, the activity of agriculture in food production can be seen as a positive step for small-scale agricultural producers. Opportunities to open new markets can provide incentives for infrastructure investment in rural areas, and the provision of agricultural extension services can improve productivity and knowledge transfer opportunities for smallholder farmers. However, there is another side to the issue, which is that the inclusion of small producers in commodity export activities is explained by the over-dependence of vulnerable farmers on unstable markets and over-dependence on large buying firms. Thus, while increased agri-food activity is an important policy tool that allows hitherto marginalized farming communities to gain a foothold in expanding markets, the dynamics may be quite different at the small scale [3].

Clusters affect competition in three ways: increasing static productivity, increasing innovation capacity, and stimulating new business forms. If a firm innovates, a competing firm cannot keep up.

Firms isolated from the cluster are less likely to innovate. Firms in a cluster have specific information about customer needs due to knowledge and relationships. Cluster participants learn about technology changes and technical capabilities, so they have greater opportunities for innovation. Another advantage of clustering is the possibility of rapid innovation, since the firms supplying the information are located in close proximity.

The advantage of clusters in the medium and long term is seen in innovation and productivity growth in agricultural production compared to local agricultural producers. Agricultural enterprises in the cluster benefit from the concentration of primary agricultural producers (including farmers and farms), as well as food processing and trading enterprises that know the needs of customers and have established relationships with them.

If we pay attention, in the conditions of the initial reforms (after 2017), attention was paid to the introduction of the cluster system in the agricultural sector in our country. In this regard, separate normative legal documents were adopted. In particular, firstly, in Annex 10 of the decision of the President of the Republic of Uzbekistan "On measures to fundamentally improve and develop the system of implementation of work related to household waste in 2017-2021" dated April 21, 2017 DP-2916, and then in the Decree of the President of the Republic of Uzbekistan dated January 29, 2022 According to the Decree No. DP-60 "On the new development strategy of Uzbekistan for 2022-2026" goal 30 is to increase the income of farmers and farmers by intensive development of agriculture on a scientific basis at least 2 times, to bring the annual growth of agriculture to at least 5%, and in this to clusters allocation of land on the basis of open competition was envisaged [4].

Today, other sectors considered important for the economy of our country, the copper industry, automotive industry, pharmaceuticals, housing construction, ITClaster and other industries, have been prioritized for implementation (President of the Republic of Uzbekistan dated January 29, 2022 "Development of the new Uzbekistan for 2022-2026 Decree No. DP-60 "on the strategy") [5].

Therefore, the introduction of the cluster system is considered not only a narrow field, but also one of the important and optimal directions for the development of all important sectors of the economy, opening the way to the world market. This makes special studies on modern trends of cluster system implementation in the field, existing problems and their legal support relevant [6], [7].

Focusing on the experience of foreign countries, there is no standard way to identify, define or describe a cluster. The overall cluster analysis is based on local and regional employment statistics in various industry categories. There are two important databases that provide data on clusters and industrial agglomerations: the Cluster Mapping Project (for the US) by the Institute for Strategy and Competitiveness at Harvard Business School; The Cluster Mapping Project has compiled a detailed picture of the location and performance of industries in the United States, focusing on the linkages or externalities between industries that give rise to clusters.

The European Cluster Observatory (for Europe), managed by the Center for Strategy and Competitiveness at the Stockholm School of Economics; The European Cluster Observatory is a platform providing a single access point to information and analysis of clusters and cluster policy in Europe. The observatory provides data and analysis on clusters and competitiveness, the cluster library, and the classroom for cluster education. The observatory focuses on three main target groups: politicians and government officials at the European, national, regional and local levels; Cluster management staff; Academics and researchers.

The European Cluster Observatory also produces analyzes and reports on regional competitiveness conditions, transnational cluster networks, clusters in emerging industries and good practices in cluster organizations [8].

Brazil's agricultural sector has a strong influence. This impact is related to both socio-economic and geographical issues and is characterized by the diversity of production chains in agricultural and livestock activities. In addition, exports of products such as meat, coffee and soybeans place Brazil in an important position in the external sector and affect the indicators of the Trade balance. Such an important position of agriculture can be observed on a global scale. Data shows that 78 percent of the world's poor people live in rural areas, mostly dependent on agriculture. As a World Bank report (2017, p. 15) states, "Improving agricultural productivity and sustainability, strengthening farmers' linkages to markets, and providing food in an economically viable way are proven tools to alleviate poverty and increase overall prosperity".

Data from the 2017 agricultural census are disaggregated to assess the behavior of family farming in the Northeast, which dominates Brazil's agricultural sector in terms of number of businesses, people employed, and food production. It can more accurately reflect possible conditions of vulnerability and poverty. It is known that family farming has different dynamics and characteristics compared to non-family farming, especially in the management of property owned by family members. In addition, the main source of income in these enterprises comes from the agricultural production activity itself, which indicates the need to analyze the socio-economic and production conditions in this segment, to monitor its profile and forms of social reproduction and the dynamics of differences between different places.

In the analysis using data from the 2017 agricultural census, in general, about 76.71% of the producers of the participation of the major regions of Brazil in the number of enterprises in agriculture are men between the ages of 45 and 55. In addition, in the education category, it was found that 23.38 percent of agricultural enterprises had never attended school. Thus, in addition to excessive land fragmentation, there is an aging tendency and low education of those responsible for agricultural enterprises [9].

Focusing on the Chinese experience, under China's unique institutional constraints, industrial clusters developed rapidly in rural areas during economic reforms. Industrial clusters simultaneously raise incomes and reduce household income inequality in rural China. Industrial clusters contribute to rural income growth mainly by increasing non-agricultural income. Clusters reduce rural inequality by creating more opportunities for disadvantaged groups to engage in off-farm activities. Specialization, urbanization and industrialization are not as affected as industrial clusters.

In China, industrial clusters have contributed to increased rural incomes, reduced poverty, and reduced income inequality.

First, rural household incomes, especially non-agricultural incomes, were higher than those in districts without industrial clusters. Similarly, counties with industrial clusters had significantly lower poverty rates than counties without industrial clusters.

Second, rural household income inequality was significantly lower in counties with industrial clusters than in counties without clusters. Interestingly, while a similar result holds for non-farm income inequality, it does not for farm income.

Third, households with more low-income members, including those who are elderly, less educated, and/or have health problems, benefit more from clustering than others. Finally, systematic evidence is provided that measured specialization, urbanization, and industrialization do not have such effects on farm household incomes or inequality. Evidence suggests that in the Chinese context, industrial clusters developed in the early stages of economic reforms under the joint efforts of entrepreneurs and local governments have reduced institutional constraints and created relatively equal opportunities for rural residents to participate in off-farm activities. As a result, agricultural incomes in those areas will increase and income inequality will decrease [10].

If we focus on the analysis conducted in the field of agriculture in Germany, 238 farmers participated in it, and they were 45 years old on average. Of all participants with a degree, only 3.4% completed an agricultural apprenticeship, while 43.9% completed a bachelor's or master's degree. Almost a quarter of them have completed an apprenticeship and only around 10% have attended university [11]. 89.1% of all survey respondents work full-time on their farm. This contrasts with the main farming population, where only 53% work full time [12]. Most of the farmers participating in the survey are from southern Germany (30.7%), followed by northern Germany (27.7%). Almost a quarter of farms (24.8%) are located in West Germany and 16.8% in East Germany. This again differs from the situation across the country, as almost half of all farms are located in the south of Germany and only 9% in the east. Thus, the northern and eastern regions are overrepresented and the southern region is underrepresented in the data. The average area of farms is 309.0 ha, of which an average of 259.7 ha is cropland, 45.2 ha is pasture and 4.1 ha is permanent cropland. The average share of leased land is 47.9 percent. The mentioned farms are thus quite large and the share of rented land is slightly smaller than the average for farms among the main population [13].

In Sardinia, which is another territory of the European Union, measures were taken for farmers, especially in the context of mitigating climate change, the latest technological requirements and awareness of the role of the farmer in environmental protection. Agroecological policy incorporates the core concept of 'good farming', emphasizing its relevance to the concerns of rural sociology. Agroecological schemes are an effective way of delivering public funds to farmers that reduce the negative environmental aspects of agricultural production. The farmer embodies environmental protection, especially in the intensive agricultural sectors typical of the Italian landscape.

Based on the Spatial Fuzzy Partitioning Around Medoids (SFPAM) approach, EU funds focus on the distribution of resources in the most needed area. Funds are mostly distributed in areas with low demographics and varying between development and stagnation. Funds have reached areas of economic or socio-demographic stagnation, introducing new paradigms to sustain agricultural production and related activities, fuel supply, and increase organic production [13].

Analyzes carried out in Spain highlight that agriculture is now the main locomotive of efficient land use and environmental change, and therefore agricultural landscapes are considered key to achieving the United Nations Sustainable Development Goals, such as food security and environmental sustainability. As socio-ecological systems, agricultural landscapes reflect the interdependence between people (farmers) and nature over time. The contribution of agricultural landscapes to society goes beyond the provision of ecosystem services (such as food, forage and fiber production). Agricultural land can contribute a wide range of other key ecosystem services, including regulation (for example, climate regulation, pollination) and cultural

(for example, aesthetic and/or tourism values) as well as providing habitat for biodiversity. However, the socio-ecological outcomes of agricultural land are related to the characteristics (structure and composition) of the supporting landscapes, which ultimately reflect the management practices, that is the farming systems prevailing at the landscape level.

The European Union's Common Agricultural Policy, which has existed since the early 1960s, continues to evolve. Increasing agricultural productivity is one of its founding principles. Article 39 of the Treaty on the Functioning of the European Union or the Treaty of Rome states that "The objectives of the common agricultural policy […] shall be to increase agricultural productivity by promoting technical progress and ensuring the rational operation of agriculture. Agricultural productivity is the relationship, measured in physical quantities, between the products produced and the materials needed in the production process. A series of reforms aimed at increasing agricultural productivity while responding to environmental and social challenges. Environmental challenges pose additional constraints to agricultural production, forcing the sector to adopt more sustainable practices. In addition, the enlargement of the European Union brought new challenges and a wider set of geographical, environmental and socio-economic conditions, revised policy objectives and the need to respond to external factors of change such as global integration.

The current concern is the need to adapt the New Deal and the Common Agricultural Policy to smart growth and high productivity from 2023, while maintaining the vitality of the rural population and adapting agricultural activities to climate change and global market conditions. All of this relies on the development of effective policies and programs that can be applied flexibly. Good policy design requires a solid evidence base, but a key challenge facing EU policymakers is the lack of clarity on the impact of Common Agricultural Policy support on agricultural performance, as shown by recent literature surveys. Potential budget cuts, reductions in direct subsidies, and a focus on improving the capacity of models to provide quality data that can inform policy decisions. Without high-quality and reliable data, policymakers are at a disadvantage in determining the future direction of Common Agricultural Policy and programs.

There are two broad modeling approaches commonly used to estimate the impact of agricultural subsidies on farm productivity. These two approaches are defined as "incremental accounting" and "boundary approaches". Growth accounting approaches use regression analysis to estimate productivity growth. These approaches treat subsidies in the production function as traditional inputs, yielding a consistent measurement of productivity because subsidies by themselves cannot produce output unlike traditional factors of production. Threshold approaches can be parametric or nonparametric.

The reform of the new EU Common Agricultural Policy will begin in 2023, aimed at promoting a sustainable and competitive agricultural sector. The new reform is central to the European Green Deal and focuses on supporting farmers' livelihoods, ensuring the availability of healthy and sustainable food and developing rural areas. The results show that the new reform aims to direct more spending to invest in agricultural innovations aimed at increasing productivity using environmentally friendly and sustainable agricultural practices.

The European Union's Common Agricultural Policy recognizes the role of agricultural landscapes in addressing society's environmental challenges, particularly by specifying specific practices that farmers must follow. In general, Common Agricultural Policy instruments are compatible with other EU policy instruments, such as the Nature Directives and the EU Biodiversity Strategy, which aim, among other things, to include agricultural areas in highly diverse landscape features and aimed at managing organic farming through the use of agrotechnical tools.

Understanding the relationships between farming systems and the resulting biodiversity and ecosystem services under different management practices is key to achieving socioecological viability in agricultural landscapes. Such understanding provides relevant knowledge to support decision-making on adaptive management programs that enable the development and implementation of actions to enhance biodiversity and/or ecosystem services according to the characteristics of target landscapes and dominant farming systems. However, the pursuit of such knowledge requires access to high-resolution data and investment in making relevant information on biodiversity and ecosystem services available at appropriate temporal and spatial scales. Nevertheless, further research on how biodiversity is linked to agricultural systems is particularly important in high-nature agriculture, which is associated with high levels of biodiversity (and the provision of many ecosystem services) but is seriously threatened by ongoing processes. is especially important in lands. Among other reasons, scrutinizing such relationships allows for detailed analysis of agricultural practices that promote specific levels of biodiversity and ecosystem services, and helps identify farm-level indicators that can be used in biodiversity or agricultural design and monitoring [14].

Based on the above, the following conclusions can be drawn: Agriculture, as the main link of the agro-industrial complex of our country, has always been a unique field for the implementation of one or another reforms carried out by our state. The reasons for this are that, on the one hand, food security

depends on the level of industrial development, on the other hand, the efficiency of economic reform can increase agricultural production, on the contrary, if the path is wrong, it can gradually reduce it.

In the management of any field, certain criteria are required, depending on the level of management and the goals of the decision-making bodies. Choosing such a criterion, in particular, the need to ensure sustainable socio-economic development, development and integration of agricultural production in regions, and the creation of systematic agriculture, clusters occupy a special and unique place.

The cluster approach to increase the competitiveness of agricultural producers in our country allows for the introduction of regional and inter-sectoral management, which allows to stimulate integration processes. Agricultural clusters are characterized by complex processes of competition and cooperation, contractual relations. In the market, agricultural clusters as a representative of the regional network allow to act on an equal basis and to resist the destructive tendencies of competition to a certain extent. This allows the development of the industry by ensuring competition, reducing the existing bureaucratic obstacles.

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