



THE FEATURES OF AGRO-INDUSTRIAL CLUSTERS IN CHINA

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ABSTRACT

Clusters, which are regionally close and functionally interconnected organizations, manufacturing and service enterprises, are currently considered as one of the most important factors of achieving long-term development goals of the national economies, improving the welfare of the population, rationally allocating the means of production, ensuring innovative development and effective work of education-research-industry triangle. Agriculture and agro-industrial complexes are important components of the national economy of any country, and play an important role in ensuring the national, economic and food security, in the harmonious development of other sectors of economy. Today, the creation of agro-industrial clusters is of particular importance in many countries. The main reason is that enterprises operating in the cluster achieve greater economic efficiency and development opportunities. Moreover, agro-based clusters play an important role in modernizing and diversifying the economy, introducing modern technologies into production process, developing innovative activity, increasing the efficiency of agriculture, agro-industrial complex, and increase the volume of industrial production. Today, the development of industrial, innovational and agro clusters in the People's Republic of China is recognized as one of the key factors in ensuring the competitiveness of the national economy and food, vegetable, flower and livestock clusters are playing an important role in improving the economic efficiency of the regions and agricultural development in the country as a whole. This article reveals the main features of the formation and development agricultural clusters in the People's Republic of China and briefly overviews the specifics of agro-clusters in the country.

INDEX TERMS: cluster, agro cluster, agro-industrial cluster, TORCH program, competitiveness, "one city, on product" program, "dragon headed enterprise", flower cluster, vegetable cluster, livestock cluster.

1. INTRODUCTION

Today, agricultural clusters can be seen in many countries around the world, because enterprises and organizations cooperating (competing in cooperation) in agricultural clusters achieve greater economic efficiency and get higher potential for development. As a result, an increase in the number of businesses enterprises and their integration into clusters spur the innovation activity of the sector and strengthen its competitiveness. In this context, particular attention is now being paid to the formation of agricultural clusters in both developed and developing countries [29].

According to Uzbek economist Juraev T. (2019) agro-industrial clusters include agricultural producers, suppliers of means of production, processing industry enterprises, service sectors (chemical, veterinary, seed, breeding, science, etc.), commercial establishments, various other economic entities and infrastructure facilities [31]. Sharma S. (2014) highlights that agro-industrial clusters development policies promote innovation and create important local externalities by establishing and maintaining vertical and horizontal links between local agricultural

enterprises [17]. Agro-industrial cluster as the group of producers, suppliers and processors of agricultural products are associated with common commercial interests. The term agro-industrial cluster itself is commonly used in post-Soviet countries, and agro-industrial clusters are usually called agro-clusters or agribusiness clusters in other parts of the world. Modern economic literatures provide several explanations for the term "agricultural cluster":

- Agro cluster (AC) is simply a concentration of producers, agribusiness and institutions that are engaged in the same agricultural or agro-industrial sub-sector, and create communication networks and build values in solving common problems and achieving common opportunities [16].

- Agro cluster - the concentration of a critical mass of agricultural producers, food industry enterprises, as well as infrastructure organizations serving them, operating in the agri-food and other markets in a comfortable business environment created with the support of the authorities, whose relationships lead to the emergence of a synergistic effect that enhances the



competitiveness and stability of the region [27].

- The agro cluster is a sustainable long-term territorial-branch association of enterprises connected by partnerships with government bodies and scientific and educational centers, created with the aim of achieving competitiveness and sustainable development of agricultural organizations, regions and the country as a whole [30].

- Regional Agrarian Cluster (RAC) - the organizational form (network structure) of the consolidation of efforts of enterprises and organizations in a particular region aimed at ensuring its food security [28].

A well-developed concentration of the corresponding agribusiness in the cluster stimulates increased productivity through specialized resources, access to information, synergies and access to public goods, faster innovations through joint research and competitive aspiration. In its turn, Theus F., Zeng D. (2012) mention that competition, demand for services and attracting investors create favorable conditions for the development of a new business, which in its turn drives innovation [20].

2. METHODS AND LITERATURE REVIEW

In this article is used an abstract-analytical approach, an empirical research method, a monograph method, analysis and synthesis, and economic and statistical analysis. The theoretical and methodological aspects of the article are based on the work of foreign and local scientists, in particular, were overviewed the works of economists as Hongyong Zhang, Anna H. Jankowiak, Harald Bathelt, Peng-Fei Li, Zhen Ye, Marcus Conlé, Markus Taube, Federico Frattini, Giorgio Prodi, Kiminami L., Kiminami A., Liu Ping, Koziol Waldemar, CAO Qingsui, Yan Junwen, Zhufang, Tao Huaiying, M. Yu, J. Calzadilla, J.L. Lopez, A. Villa that studied the features of Chinese cluster policy, the characteristics of agro-industrial clusters and high-tech industries development in China [8, 1, 2, 7, 26, 14, 11, 12, 3, 18, 13]. It should be noted that, according to Teng, Z.H. and Wang, H. (2012) studies on agro-clusters in China have begun to be studied since the beginning of the 21st century, especially after 2003 [19]. Many of the studies have focused on the identification, formation, classification and problems of agricultural clusters, as well as the role of government in agricultural clusters development [13].

3. DISCUSSION AND ANALYSIS

3.1 Cluster Policy in China

In China, clustering and local concentration of industry began in the 1980s with the formation of special economic zones. As a result of the "Open Doors" policy, some parts of the country were opened to foreign investors and international trade [5]. In

1989, in the country was launched a "one city, one product" campaign, that meant the targeting of different regions on specific products. At the same time, it was established that at least 30% of the region's production and population were specialized in the same type of production. As a result, today by the Chinese clusters are understood not only the association of industrial enterprises, firms, universities, research institutes, but also whole cities themselves.

"Chinese model" of cluster formation is based on a "French" approach, and business cooperation in the country is supported by formal structures. In the Chinese cluster model, the government plays an important role in financing and maintaining the clusters. Both central and local governments develop cluster policies in the country and Chinese central government strives continuously develop clusters in accordance with guidelines for industrial cluster development announced by the National Development and Reform Commission (NDRC). One of the most important cluster development programs implemented by the Chinese government in 1988, was TORCH, based on China's initiative to develop new and high-tech industries [10]. Also, in a strategy in 2007, developed by the National Commission on Reforms and Development, clusters were mentioned as an important factor in economic development. This strategy identifies several areas that form the basis of the country's cluster policy: enhancing planning, rational use of resources, enhancing business through specialization, promoting innovation, promoting sustainable growth, encouraging regional branding through patents, services sector development and others [15].

In China, clusters are mainly developed in agriculture, high-tech industries and manufacturing. Looking at the cluster mapping of the country (Figure 1), we can see that the majority of the clusters are located in the eastern part of the country. Most clusters are located in Jiangsu, Shanghai, Zhejiang, Fujian and Guangdong provinces [21], while modern agricultural clusters are developed in Shandong, Beijing, and Shaanxi [9].

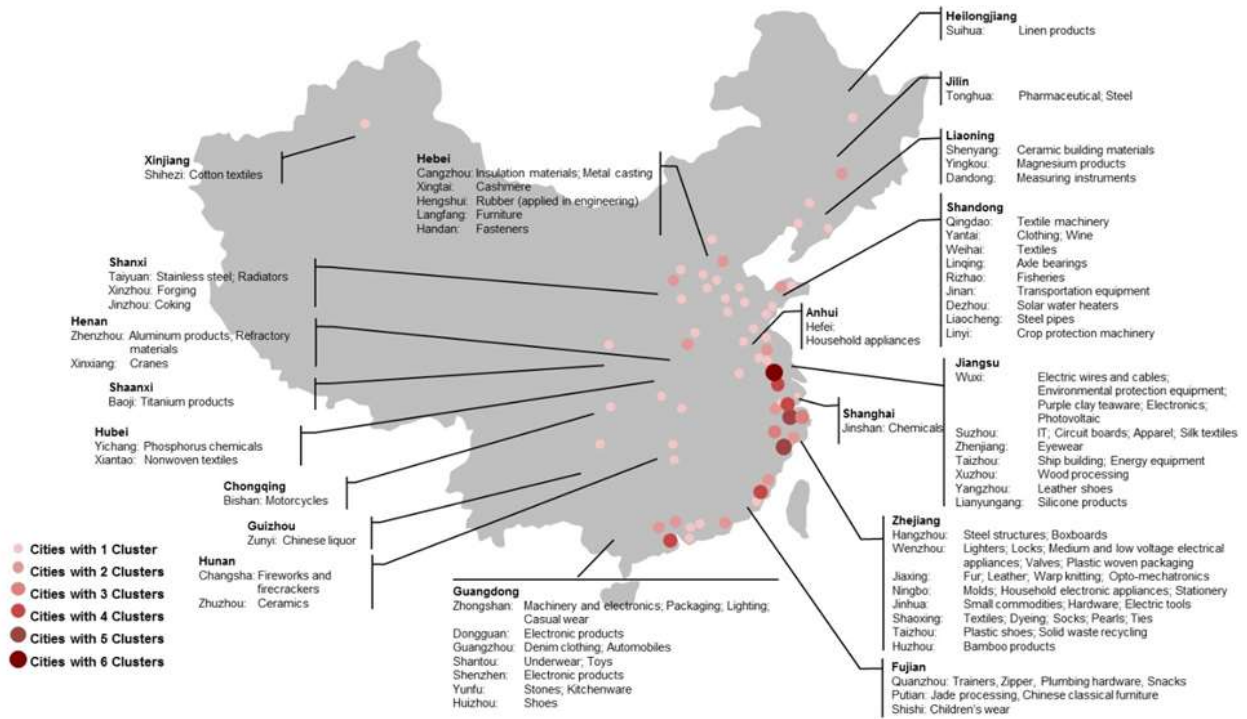


Fig.1. The map of Chinese clusters

Source: Federico Frattini, Giorgio Prodi. Industrial clusters in China: Policy tools for further and more balanced development. ERIEP, Number 5, Cluster policy for innovation and competitiveness, Industrial clusters in China: Policy tools for further and more balanced development, mis en ligne le 09 janvier 2013, URL: <http://revel.unice.fr/eriep/index.html?id=3476The>

3.2 Agro-industrial clusters in China

When economic scientists analyze the real foundations and factors that lead to the formation of agricultural clusters in China, they mention the factors such as the expansion of agricultural production, advances in agricultural production and entrepreneurial activity of farmers, rural entrepreneurship, a high demand on agro-food production, market competition, and uneven distribution of agricultural resources.

According to Wang, J.G. (2005) there are several types of agro-industrial clusters in China, based on domination, composition and environment. From the organizational standpoint there are "company + farmer" type, coordinated farmer's cooperative, "dragon-headed enterprise" (mainly a company specializing in processing or distributing agricultural products and providing market access to farmers) and vertical integration [22]. Agricultural clusters also can be classified as dominant type, market type, investment-driven type, and specialized small-town type in terms of driving forces. From a private sector perspective, agricultural clusters can be divided into agricultural development, livestock clusters, agricultural processing clusters, agricultural product distribution clusters, and agricultural scientific and technical clusters [24].

M. Yu, J. Calzadilla, J. L. Lopez, A. Villa. (2013) discuss

several challenges associated with the development of agricultural clusters in China, which may include the following [13]:

- 1) The agricultural cluster does not have specific regional characteristics, often has the same or similar industry, which negatively affects competition within the cluster;
- 2) insufficient agricultural dragon-based enterprises with strong potential to create large-scale small-scale farmers to produce highly competitive, market-oriented products;
- 3) the possibility of technological innovation in the agricultural cluster is still weak and the level of technology is still low;
- 4) It is difficult to create an environmentally profitable business environment with poor internal cluster capacity. There is insufficient cooperation between agricultural cluster participants and interconnection is poorly minimized, reducing the synergistic effect of the cluster;
- 5) Agricultural enterprises often face difficulties in financing by financial institutions. Support institutions and public utilities are not well established.

With the development of agriculture and the changing structure of agriculture, agro-industrial clusters have begun to emerge in many parts of China. Among them could be mentioned vegetable clusters in Shouguang, tea clusters in Anxi, flower cluster in Chenggong, sugar cluster in Guixian, garlic cluster in Jinxiang,



Being based on one type of agricultural product, these clusters are considered as the concentration of specialized producers, processors, suppliers, transport providers, intermediaries, research organizations, service organizations and other supporting institutions [23].

One of the most famous agricultural clusters in China is in Shouguang, where most vegetable production is produced. It was the pilot agro-based cluster in this province and nowadays is famous as the "homeland of Chinese vegetables". M. Yu, J. Calzadilla, J. L. Lopez, A. Villa (2013) highlight major role of the local government in the formation of the cluster. Because, within the support of local authority were restructured agricultural crops and expanded vegetable production; improved the infrastructure of agricultural production; introduced the new technologies and, increased the production efficiency; implemented the standardized production, improved vegetable quality and attracted investments in this field, created the "silicon valley" in agriculture; and was developed a market system, that increased distribution efficiency [13].

Another well-known agro-cluster in China is Chenggong flower cluster, in Dian that produces nearly 70% of the flowers in the Chinese flower market. At the same time, the government of China is paying a great attention to the development of livestock clusters in the country, and "Priority Area Program" of the Ministry of Agriculture of China is playing a major role in this process. The program, which includes 11 types of products, also includes the production and processing of cattle, mutton and goat meat, as well as supports the formation and emergence and the development of a large livestock sector in China [6].

Furthermore, it must be noted that China has also established international cooperation in the formation and development of economic clusters. China is one of the seven target countries participating in the EU's European Strategic Cluster Partnership - Going International (ESCP-4i) and is one of the key areas of cooperation is food security [10].

4. CONCLUSION

In summary, it could be said that China's cluster policy is unique because of the political, economic and social system of the country. For this reason, many economists believe that the Chinese cluster model cannot be implemented in other countries. In China, the authorities play a key figure in cluster policy, and local and central governments carry out the formation, development of clusters. At present, China is introducing innovative methods of development in agriculture through accelerating the development of agro-industrial clusters. This is due to the depletion of natural resources globally, the significant rise in demand for agricultural products and the strong competition in world economy. In these conditions, it is important to ensure the sustainable delivery and the improvement of the quality of agricultural products, increasing the competitiveness and opportunities for sustainable development of agriculture. In addition, agro-clusters are seen as a tool for

employing a large number of people in China, especially in rural areas and to diversify the national economy and increase exports of Chinese agricultural products to world markets.

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