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**SCIENTIFIC AND
METHODOLOGICAL
FOUNDATIONS FOR
THE FORMATION
OF INDUSTRIAL
CLUSTERS AND
SUBSTANTIATION
OF THE CLUSTER
CONCEPT FOR THE
DEVELOPMENT OF
INDUSTRIAL
COMPLEXES**

Today's problems of industrial clustering are actively discussed by international and domestic experts from various fields of science and industry. The opinion was formed that the achievement of an innovative model of socio-economic development of any territory is impossible without the formation of effective production clusters.

The modern concept of a production cluster as a set of technologically related and geographically concentrated enterprises, is quite capable of uniting and "absorbing" such categories accepted in the Soviet scientific school, as "energy production cycle" and "territorial-production complex" and significantly increase the efficiency indicators of the territorial organization of the productive forces of society.

Today, the most researchers [6; 13; 16] agree that N. Kolosovsky "Economic zoning → territorial production complexes (TPC) → energy production cycles (EPC)" was successful precisely for the industrial era that is leaving. In new the conditions, it is necessary to reconstruct it taking into account the growing role of agglomerations as centers of the new economy (knowledge economy). A. Marshall described the concept of collective knowledge in the manufacturing zone of the term "industrial atmosphere", which can be defined by the phrase "... knowledge [about production] flies in the air" [2]. Actually, the concept of the EPC (the concept of the economic-geographical process, built

using technological factors) remains enough productive for analyzing the economy territorial structure.

The integrated approach to the use of resources inherent in the EPC concept, accordingly, to the introduction of low-waste technologies, is one of the radical methods of improving the ecological situation. However, this concept is not without certain disadvantages. First of all, it should be noted a certain schema, resource orientation and focus on the type of the economy of resource consumption (it was presented in the USSR), lack of connection with social factors of regional development. Perhaps that is why, in a market economy, the concept of the EPC was quickly and easily transformed into the concept of production clusters, as a peculiar of “grape bunches” territorially and technologically related enterprises. Classic EPC by N. Kolosovsky [9] and A. Khrushchev [16] have long gone beyond the economic regions and have largely lost the district-forming functions [7; 8]. EPC ceased to be regional, but became inter-regional and international. This is due to the influence of scientific and technological revolution on production and transport, the development of specialization and cooperation of production, loss of the limiting value of transport (transportation is now relatively cheap and fast) as well as the loss of the leading role of the energy factor (due to the creation of unified energy systems, an effective “transfer” of electricity is sometimes carried out over thousands of kilometers). The formation of economic regions is the result of the process of territorial division of labor (as a variety of geographical division of labor). The economic region is characterized by unconditional objectivity, economic feasibility, optimal combination of specialization and complexity is based on the concept of regional TPCs, provides for the compulsory combination of economic and administrative boundaries.

A territorial production complex (TPC) is an interconnected and interdependent combination of industries in a certain territory (the scale of this territory can be different – from country to economic region, sub district or locality). The economic unity of the TPC is created by the production-territorial communications of enterprises, using common regional natural and social conditions and resources, industrial and social infrastructure, and a unified settlement system.

The term “territorial-production complex” was supposed to emphasize the defining complex-forming role of the territory. However, the experience of using the term TPC demonstrates that it has remained “production” in its content. It did not cover the totality of relations and

connections of the region. By the way, the term itself originally sounded exactly like “production-territorial complex”, thus giving preference to purely production aspects. As you can see, the desired complexity of regional development turned out to be an abstract idealization, practically unattainable as a result of the influence of a number of factors, in particular the subjectivity of managerial decisions [10].

In the context of the introduction of new forms of territorial organization of the economy TPC is gradually being replaced by the concept of “production cluster”, which was initially developed in the western regional economy [15; 17]. Today the boundaries between these concepts remain rather blurred due to the presence of certain common features. At the same time, all researchers note as the main difference between clusters and TPK – obligatory consideration of market mechanisms and initiative “from the bottom”. Clusters are formed within industrial and urban agglomerations and functioning on the principles of knowledge conversion. Cluster principles of organizing production contribute to increasing the competitiveness of economic complexes different hierarchical levels due to the achievement of balanced interaction between business entities. The concept of TPC is also criticized for the fact that the mechanism of their formation is based on state ownership. In a market economy, no one needs “Additional economic effect from the aggregate location of enterprises within the TPC” if this “effect” does not go to the owner of the enterprise in the form of profit, but is picked up the state [10]. On the other hand, people doing business in private property, do not care too much about the objectivity of existence, specialization, and the complexity of the territory to which their enterprise spatially belongs. Expected effect of combining different industries on the same territory as part of TPC small business representatives are not at all interested.

Despite a significant variety of research approaches to the definition, the thoughts of the absolute most scientists agree that an industrial cluster is a collection of technologically related and geographically concentrated enterprises.

The geographic scales of an industrial cluster can vary from one settlement to a large region. This versatility somewhat complicates cluster identification. For example, national innovation clusters should correspond to the strategic directions of the state’s development, regional production clusters should support the economic priorities of the regions (or other meso-level regions) in order to increase their competitiveness. But the task of local clusters is to harmonize the

development of individual settlements and structuring the economic space. In this case, the spatial boundaries of the clusters may not coincide with the administrative-territorial division. In fact, the spatial dimensions of industrial clusters are more dependent on transport and communication conditions, regional (territorial) identity of the population [4] and other factors.

The concept of industrial clusters has a rather long history of development. The classical definitions of clusters and clustering belong to professor Michael E. Porter. In Porter's view, a cluster is a group of closely related, geographically interconnected companies and organizations that operate jointly in a certain type of business and characterized by common areas of activity and complementarity of one another [19].

Clusters allow for a synergistic effect as a result of close interaction of interconnected enterprises, which are geographically close. Production clusters as integrated combinations, allow to consolidate the efforts of not only business entities, but also science and government. And the territorial concentration of vertically and horizontally related enterprises, as a rule, leads to the formation of a joint production and financial group. It can be regarded as the core of the production cluster. Based on the specifics of production, production (industrial) clusters can be formed as highly specialized (*homoclusters*), and as weakly specialized (*heteroclusters*). Homoclusters are more typical for machine-building enterprises, coal specialization, while heteroclusters are for processing industries, associated primarily with agricultural production.

A special type of heterocluster is made up of the so-called regional industrial clusters (RIC) – innovative structures that are formed in the region based on the concentration of networks of manufacturers, suppliers and consumers, connected by general schemes of production and products sales, regional problems from the creation and development of the institutional environment. The main goal of their creation is the need to establish interaction between the subjects of the regional economy for the realization of their own goals and the region competitive advantages [5].

By the character, allocate clusters, which are formed spontaneously (or spontaneously created clusters of enterprises), and artificially created (or deliberately) clusters. By clusters that form spontaneously include “Agricultural engineering” in Melitopol, Zaporizhzhia region. This cluster unites entities not only in the field of agricultural engineering,

but also green rural tourism, beekeeping and etc. According to technological characteristics, clusters are often divided into handicraft, industrial, intellectual (innovative).

The cluster approach to the development of national economies is a powerful tool to stimulate and effectively develop the region due to an integrated (intersectoral) view of the regional development policy, development of dialogue between the main subjects of economic relations (government, business, universities, regional elite, etc.), reduction of contradictions between productivity and employment [12]. Production clusters can play the role of “growth poles” of the domestic market, as a result of which, as already indicated, the region’s competitiveness increases. Consolidation with science contributes to the introduction of advanced technologies in production and the development of new types of economic activities, structural and technological modernization of the economy. Intellectual resources are an important source of competitive advantage, so clusters are increasingly concentrated around innovatively active enterprises, which form a peculiar of core and promote the transfer of innovations to other association members.

The creation of favorable conditions for the development of the production cluster provides for the improvement of quality as a basic, and professional education, including for the purpose of training a qualified workforce, capable of introduce innovation. The interaction between educational institutions and business entities involves not only targeted training of specialists in required professions, but also improving the quality of educational services in terms of acquiring practical skills during teaching (practical training and internships), attraction of heads of leading companies to examination commissions, etc.

Additional advantages of the cluster model of the organization of the economy are: access to innovations through the counter-flow of intercompany flows and information; the formation of a local sectoral labor market, which facilitates the exchange of employees and improving their qualifications; cost reduction of services due to the use of resources and infrastructure, competition between suppliers and consumers, development of cooperation and contractual specialization.

The main differences between the concepts of TPC and clusters are as follows: 1) the corresponding concepts were created in different socio-economic systems and have a different genesis – TPCs were designed to optimize industrial production in a planned economy as

clear technical and economic models, clusters are formed as a result of the spatial manifestation of market forces; 2) have different localization – clusters are formed in long mastered densely populated areas (especially within agglomerations), and TPC – in areas of new development with a low population density and difficult natural conditions; 3) have a different structure: a cluster is an aggregate of competing (albeit cooperating) independent firms, who work in one industry or sub-industry, and TPC – intersectoral complex, the development of which is regulated centrally; 4) have different industry specializations – clusters arise in new high-tech industries, the service industry or traditional industries that produce consumer goods, TPC, as a rule, in heavy engineering, mining, metallurgical, chemical industries; 5) different role of information in the formation of their spatial structures – a cluster assumes close information exchange between employees, however, TPC is a vertically integrated structure without information exchange between employees of various enterprises.

Each concept corresponds to the socio-economic system of its time and the stage of development of the state: TPC model – socialist and mostly industrial era, the concept of clusters – market and largely post-industrial era. As can be seen, in the TPC, the connections between the participants were material (commodity, energy flows), but the cluster combines both material and intangible ties between agents of the local economy. An important component of modern regional development is the creation of regional innovation networks. Moreover, their efficiency increases when the region and its intraregional networks are integrated into the global network. Thus, a modern cluster network territorial structure of the economy is formed, which is based on dynamic horizontal and flexible vertical links. At the same time, the production cluster is characterized by geographical localization, industry affiliation, methods of formation, peculiarities of appearance, resources, technologies, state of competitiveness, close enterprises cooperation, which lead to a positive interaction, after all, the development of one production in a cluster is associated with the general development of a production cluster. When building a cluster are used three types of cluster policy: top-down, bottom-up, and mixed.

The initiators of the first type of cluster policy are central or regional authorities. When conducting a cluster policy “bottom-up”, the initiative is mainly from local authorities and associations of local entrepreneurs, and the object of such a policy is usually spatial (regional or local) clusters. In practice, a mixed version is usually used, when both paths

are combined in parallel in time [11].

When creating target clusters, it is worth focusing on the criteria of the Economic Center for Education and Research of the city of Cincinnati, Ohio, according to which: the cluster should provide high average wages, positively affecting local incomes; the cluster must provide a strong employment base (percentage of people employed in a cluster of a certain region) for success (with the exception of the regions, they are trying to reorient themselves to another industry); the cluster should cover areas that are not limited to the development of the local economy, but create or expand an export base, to attract capital to the region from outside, contributing to its economic development on the principle of a multiplier; the cluster should include highly developed enterprises of state and local authorities, indicates its strong presence in the region for the national economy; the cluster should contribute to the growth of employment of the country's population. The interconnection of cluster of development with national processes creates conditions for in order to "catching a wave" which will contribute to the growth of the local economy; the cluster should contribute to significant economic growth, due to the use of local factors (local growth minus national growth).

The cluster structure is a model for building cooperative ties between the entities of the association. Conventionally, can be distinguished 4 groups of interacting subjects:

1. The core of the cluster is industrial enterprises located on the territory grouped by main product or by sub-industry. The characteristics of the group are the total number of enterprises, volume of products shipped, number of employees, assessment of taxes as an economic contribution to the regional budget.

2. Suppliers of cluster enterprises. Divided into local companies and enterprises from other regions. Suppliers are also grouped by type of supply.

3. Cluster enterprises consumers. Segments – domestic consumption, interregional supplies, exports, which allows to directly evaluate the export of the cluster as the main criterion of efficiency and develop measures of state support based on the possibility of increasing export supplies.

4. Supporting infrastructure (service objects). Includes industry and community associations, administrative support, financial, warehousing and transportation services [1].

Summing up, we can say that the theory of industrial clusters is able

to provide interests of balanced spatial development, in particular in terms of determining the locations of localization of “growth poles” and the choice of such spheres of activity that are capable of ensuring the socio-economic growth of the regions (the so-called “smart specialization strategy”) [3; 14]. Such “smart specialization” today is an important concept of cluster policy based on the competitive advantages of regions and their opportunities for innovation. Thus, clusters can serve as an important tool for regional development.

The implementation of cluster policy in the regions of the country can contribute to the innovative development of enterprises by: realizing the potential for effective interaction between cluster members associated with their geographically close location; obtaining by the enterprises of the cluster the opportunity to enter highly competitive international markets; establishment of intellectual and technological cooperation between the enterprises of the cluster; cooperation with research, development and educational institutions; greater access to resources, including financial; market integration, in its turn, will contribute to the expansion of international investment flows and increased regional competition in terms of the investment climate; increasing the scientific and innovative potential of the region due to technology transfer [11].

Clustering processes have become an objective feature of the modern world economy. The cluster approach allows us to introduce an innovative and investment model of economic development at the regional level. Production clusters have been successfully operating in the countries of the “golden billion”. However, it should be noted that no successful clustering model can be introduced without taking into account the specifics of the national economy.

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**STATE POLICY FOR
PROMOTING
NATIONAL ECONOMY
DEVELOPMENT**

Introduction. Modern financial and economic science focuses on the issues of increasing the effectiveness of state policy to stimulate the economic development of Ukraine. Methodologically and scientifically practical issues remain insufficiently researched due to the understanding of institutional changes in the economic space, which occur as a result of increasing influence of globalization factors. The dynamic and cyclical nature of economic processes necessitates the adaptation of the components of the economic system to changes in financial and economic conditions. It is important to evaluate the impact of exogenous and endogenous factors on economic growth timely and carefully. State economic development policy should aim at creating the right conditions for deepening the interaction between the state and society, ensuring macroeconomic stability and improving the standard and quality of life of the population. In this regard, the formation and implementation of state policy of economic development of Ukraine in modern conditions remain an urgent task of scientific research.