



DEVELOPMENT OF CLUSTERS IN THE METALLURGICAL INDUSTRY: FEATURES AND PROSPECTS

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Annotation: The article examines the key aspects of the development of cluster structures in the metallurgical industry of the Republic of Uzbekistan, analyzes their features and potential benefits for the country's economy.

Keywords: metallurgy, cluster structures, competitiveness, industrial cooperation, innovative development.

Modern economic science pays considerable attention to cluster models of industrial development. It is interesting that the roots of this concept go back to the 19th century, when Alfred Marshall first drew attention to the advantages of geographical concentration of specialized enterprises. His observations showed that groups of small and medium-sized enterprises concentrated in one region and specializing in certain production stages can demonstrate efficiency comparable to large industrial giants. Developing these ideas, Michael Porter formulated a modern understanding of clusters as geographically concentrated groups of interconnected companies, specialized suppliers, service organizations and related institutions (universities, standardization bodies, trade associations). Moving directly to the metallurgical industry, it should be noted that clusters in this sector are complex systems of interacting elements. These structures unite metallurgical enterprises with other economic entities through long-term cooperation ties, creating a synergistic effect. The key features of metallurgical clusters are:

- Multi-level technological cooperation between participants
- A unique competitive environment that combines competition and cooperation
- Effective mechanisms for coordinating management decisions
- Pronounced territorial localization of production functions



- High stability and long-term cooperation relations

Considering the variety of cluster models, we can identify several main types, each of which has its own characteristic features:

1) "Discrete clusters" unite enterprises that produce final products from individual components (for example, in mechanical engineering or automotive manufacturing).

2) "Process clusters" are typical for industries with continuous technological processes, such as metallurgy, chemical and pulp and paper industries.

3) "Transport and logistics clusters" are formed around key transport hubs and include companies specializing in transportation, storage and distribution.

4) "Innovation clusters" are concentrated around research centers and are engaged in the development of new technologies and materials.

5) "Tourism clusters" integrate various enterprises in the tourism industry.

An analysis of global experience shows that various countries have developed their own models of cluster development:

- In Italy, clusters are formed mainly by small and medium-sized enterprises that unite to strengthen their competitive positions.

- The "Japanese model" is built around large industrial leaders creating extensive supplier networks.

- Finlandia places emphasis on innovation and international business cooperation.

- The "North American approach" is characterized by market orientation and competition between participants.

- The "Asian model" (India, China) actively attracts foreign investment and advanced technologies.

The effective development of metallurgical clusters depends on the combination of several key factors:

Stimulating factors:



- Availability of qualified personnel and research base
- Established traditions of industrial cooperation
- Active support from the state

Constraining factors:

- Shortage of quality raw materials
- Weak integration of science and production
- Administrative barriers
- Lack of a clear development strategy

In conclusion, it can be stated that the successful development of metallurgical clusters in Uzbekistan requires a comprehensive approach combining the efforts of the state, business and the scientific community. Removing existing barriers and creating favorable conditions for innovation will significantly increase the competitiveness of the national metallurgical industry in the world market. A promising direction is the adaptation of the best international practices taking into account the specifics of local conditions, which can become an important step in the modernization of the country's industrial complex.

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