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ASSESSMENT OF THE POTENTIAL FOR THE FORMATION AND DEVELOPMENT OF A CLUSTER OF CONSTRUCTION MATERIALS IN ASTANA

The article conducted a study to assess the potential for introducing and developing clusters in the production of construction materials based on the economy of the city of Astana, and the significance of the study was reflected in determining and proving the advantages of the clustering system in this area. The purpose of the scientific work is to study theoretical principles and develop practical recommendations for improving the competitiveness of the regional economy on the example of Astana through the mechanism of creating and developing clusters for the production of construction materials.

In the course of the study, such specific methods as general methods of economics, economic and statistical analysis, critical calculations, functional analysis and system direction were used. The theoretical foundations of the study are methodological concepts, scientific works and quantitative data of national statistics of various scientists, researchers on the implementation and development of the cluster system in the industry economy. Also, based on them, in order to achieve qualitative research results, such estimated indicators as localization coefficients, per capita production coefficients and specialization coefficients were calculated.

The results obtained confirm the effectiveness of the implementation of the clustering system for the production of building materials in the development of the economy of Kazakhstan, which is reflected in the example of the city of Astana. Evaluation of performance indicators made it possible to substantiate the presented concepts and prove their practical significance.

According to the authors, the results of the study can be effectively used in research work when solving the issues of clustering the construction industry in the development of the region. The key findings and these specific recommendations can serve as a basis for preparing development plans and strategies aimed at improving the competitiveness and efficiency of enterprises and organizations in the construction industry.

Key words: cluster, cluster of production materials, localization coefficient, per capita production coefficient, specialization coefficient.

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Астана қаласында құрылыс материалдары кластерін қалыптастыру және дамыту әлеуетін бағалау

Мақалада Астана қаласының экономикасы негізінде құрылыс материалдарының өндірісі саласында кластерлерді енгізу және дамыту мүмкіндіктерінің әлеуетін бағалау жөнінде зерттеу жүргізілді және зерттеудің маңыздылығы осы салада кластерлендіру жүйесінің артықшылықтарын айқындаумен және дәлелдеумен байланысты көрініс тапты. Ғылыми жұмыстың мақсаты – құрылыс материалдарын өндіру жөніндегі кластерлерді құру және дамыту тетігі арқылы Астана мысалында өңірлік экономиканың бәсекелік қабілеттілігін жақсартудың теориялық қағидаттарын зерттеу және практикалық ұсынымдарды әзірлеу.

Зерттеу барысында экономиканың жалпы әдістері, экономикалық-статистикалық талдау, сындарлы есептеу, функционалдық талдау және жүйелік бағыт сияқты ерекше әдістер қолданылды. Зерттеудің теориялық негіздерін сала экономикасына кластерлік жүйені енгізу және дамыту бойынша әртүрлі ғалымдардың, зерттеушілердің әдістемелік тұжырымдамалары, ғылыми

еңбектері және ұлттық статистиканың сандық мағлұматтары құрады. Сондай-ақ, осылардың негізінде зерттеудің сапалы нәтижелеріне қол жеткізу үшін оқшауландыру коэффициенттері, жан басына шаққандағы өндіріс коэффициенттері және мамандандыру коэффициенттері сияқты бағалау көрсеткіштері есептелді.

Алынған нәтижелер Қазақстан экономикасының дамуына құрылыс материалдары өндірісін кластерлеу жүйесін енгізу тиімділігін растайды, бұл Астана қаласының мысалында көрсетілді. Тиімділік көрсеткіштерін бағалау ұсынылған тұжырымдамаларды негіздеуге және олардың практикалық маңыздылығын дәлелдеуге мүмкіндік берді.

Авторлардың пікірінше, зерттеу нәтижелері өңірді дамыту жағдайында құрылыс өнімдерінің өндірісі саласын кластерлендіру мәселелерін шешу барысындағы ғылыми-зерттеушілік жұмыстарда тиімді қолданылуы мүмкін. Алынған түйінді қорытындылар мен берілген нақты ұсынымдар құрылыс саласындағы кәсіпорындар мен ұйымдардың бәсекелік қабілеттілігін көтеруге және олардың тиімділігін арттыруға бағытталған дамыту жоспарлары мен стратегияларын дайындау үшін негіз бола алады.

Түйін сөздер: кластер, құрылыс материалдарының өндірісі кластері, оқшауландыру коэффициенті, жан басына шаққандағы өндіріс коэффициенті, мамандандыру коэффициенті.

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Оценка потенциала формирования и развития кластера строительных материалов в городе Астана

В статье проведено исследование по оценке потенциала возможностей внедрения и развития кластеров в сфере производства строительных материалов на основе экономики города Астаны, и значимость исследования нашла свое отражение в определении и доказывании преимуществ системы кластеризации в данной сфере. Цель научной работы – изучение теоретических принципов и выработка практических рекомендаций по улучшению конкурентоспособности региональной экономики на примере Астаны через механизм создания и развития кластеров по производству строительных материалов.

В ходе исследования были использованы такие специфические методы, как общие методы экономики, экономико-статистический анализ, конструктивный расчет, функциональный анализ и системный подход. Теоретические основы исследования составляют методические концепции, научные труды различных ученых, исследователей и количественные данные национальной статистики по внедрению и развитию кластерной системы в экономику отрасли. Также на их основе для достижения качественных результатов исследования были рассчитаны такие оценочные показатели, как коэффициенты локализации, коэффициенты производства на душу населения и коэффициенты специализации.

Полученные результаты подтверждают эффективность внедрения системы кластеризации производства строительных материалов в развитие экономики Казахстана, что отражено на примере города Астаны. Оценка показателей эффективности позволила обосновать представленные концепции и доказать их практическую значимость.

По мнению авторов, результаты исследования могут быть эффективно использованы в научно-исследовательской работе при решении вопросов кластеризации отрасли производства строительной продукции в условиях развития региона. Полученные ключевые выводы и данные конкретные рекомендации могут служить основой для подготовки планов и стратегий развития, направленных на повышение конкурентоспособности и повышение эффективности предприятий и организаций строительной отрасли.

Ключевые слова: кластеры, кластер производства строительных материалов, коэффициент локализации, коэффициент производства на душу населения, коэффициент специализации.

Introduction

Today, the most important issue of any country is the formation of advantages and the search for ways to increase competitiveness for economic

development. As one of the ways, it is possible to use mechanisms for creating highly efficient clusters and clustering systems to raise the economic activities of individual countries and regional economies to a qualitative level. As a rule, clusters and cluster

systems influence the establishment of mutually beneficial relations between various participants in economic reproduction, such as production enterprises and service organizations, higher educational institutions and research institutions, authorities and financial organizations, and create conditions for the development of production processes with high added value.

The fact that the transition to an innovative model of a new economic policy based on clustering is today evidenced by the active development of business projects, startup initiatives, innovative and scientific and technical centers. The emergence and active functioning of such organizations will make it possible to provide technological and production infrastructure that ensures the access of industrial enterprises engaged in the production of products to critical resources.

Cluster systems, which are formed within the framework of regional economies, have several unique advantages. They will contribute to significant progress in the framework of regional and socio-economic development as part of the new economic policy, while cluster systems will be able to provide the most effective mechanisms for stimulating territorial development. As a result, this is manifested in an increase in the number of new jobs in the regions, an increase in local budget revenues and, finally, in an increase in the competitiveness of local industries.

About twenty years ago, the introduction of cluster initiatives in the economy was launched in Kazakhstan, but time shows that this initiative is still a pilot and insufficiently studied in economic practice. This is due to several key issues. First, there is a lack of information that would allow various objects to be combined into a single environment to form clusters. Secondly, there is no consistent system of indicators that could assess the performance of such clusters. As a result, the territories in the regions where it is possible to create a cluster in industrial production must comply with the requirements of the law, require additional research to prove the influence of various external and internal factors that contribute to the effective functioning of legal support.

The creation of clusters that can have a multiplier and synergistic effect on the development of all sectors of the economy can become a good basis for increasing the competitiveness of not only an individual region, but also the country's economy as a whole, despite the existing world challenges and threats.

In this regard, now there is a need to improve the mechanisms for assessing the socio-economic

potential of various industrial enterprises in the country and regions, based on the introduction and development of cluster projects, the effective use of cluster systems. In this case, the issue of ensuring the competitive advantages of the region's economy through the revival of cluster initiatives and clustering systems requires additional study in this area and further study predetermines its relevance.

Literature review

Michael Porter, a well-known American scientist and economist, made a huge contribution to the development of cluster theory and cluster systems.

The work and research of this scientist covers priority areas of research on evidence-based cluster initiatives and mechanisms, issues of improving organizational and economic mechanisms for effective management of innovative development at the level of the country's economy, a particular region, a particular industry and individual enterprises. In his well-known book «Competitive Strategy: Methods of Analyzing Industries and Competitors», he pays special attention to improving the organizational and economic mechanisms of innovative development at the level of industries, regions and companies. According to Porter, priority research areas can be identified by implementing clusters related to the formation of innovative economic management processes and innovative systems, and providing evidence-based approaches to cluster projects. (Porter, 2011).

Since the object of research is the production of building materials and the construction industry as a whole, it is important for us to consider the research of various scientists involved in the study of the theory and practice of a construction cluster in order to fully understand how clusters can be introduced in this area and its importance. These specialists represent different branches of knowledge and have their own unique views on this problem. So, according to Isaksen, clusters aimed at developing the construction industry must meet four main criteria:

1. Clusters should consist of geographical groups of similar, related and interconnected economic activities.

2. Cluster activities focused on a specific industry (in our example, the construction industry) should be associated with various forms of local cooperation and competition in the region.

3. The subjects participating in the cluster should understand that they are part of the cluster and

develop common actions with mutual understanding to strengthen the cluster.

4. Clusters as a successful project should stimulate innovation in the construction industry and the competitiveness of their constituent building materials enterprises (Isaksen, 2018).

The development of the production of construction materials is of great importance for stimulating economic growth. Since the construction industry, as one of the most important sectors of the economy, affects many other industries. There is also special scientific interest when it comes to the success factors of large infrastructure projects in developing countries (Abdelalim et al., 2019).

Foreign scientist Lea, having deeply studied the priority sectors of the economy, especially construction, comes to the following conclusion, that is, he draws an important conclusion about providing industry with a cluster development path as an effective strategy that meets the requirements of the development of the world market (Lea, 2020).

Clusters in the construction industry and their contribution to the development of the regional economy have been studied by scientists such as P. Gordon and K. Kourtit. According to them, the cluster model is now widely known as one of the most effective types of achieving competitive advantages. The effective functioning of clusters in the field of building materials depends on several key factors. An important role is played by their centers, the development of the construction industry in a particular region, demand for building materials, initiatives from the management of construction companies and government agencies to introduce new forms of cooperation, stability of the economic situation, reliability and stability of construction enterprises, the presence of large advanced companies, which can become the core of the construction cluster and stimulate construction activities, availability and concentration of qualified personnel, availability of educational institutions of an appropriate profile, investment attractiveness of the region, the level of development of the manufacturing industry and the social sphere (Gordon and Kourtit, 2020).

D.I. Streltsov points out the need to create innovative territorial clusters in the development of the building materials industry. The construction cluster, according to Streltsov's definition, is a group of organizations working in the construction sector. This group includes scientific and educational institutions, companies engaged in innovation, investment, finance, production and infrastructure. In addition, representatives of regional authorities

participate in the cluster. All these organizations unite to implement joint projects in order to improve their competitiveness in the market. The main direction of the cluster is the development and production of innovative construction materials (Streltsov, 2022).

L. N. Mulendeeva considers it expedient to assess the results of industry clustering in the industry under consideration by comparing the results of the functioning of the existing construction complex (the basic structure of the industry) and enterprises within the cluster organization (Mulendeeva, 2023).

Studies show that scientists and economists from different countries are actively studying cluster initiatives related to the development of the construction materials industry and increasing the competitiveness of enterprises in the construction sector. Kazakhstan also conducts scientific work aimed at developing a cluster approach to strengthen the competitiveness of the national economy. Most researchers agree that the introduction of clustering systems can have a positive effect on the region's economy. However, estimating the economic impact of cluster creation and development requires more research.

Methodology

The main research methods for the trends in the formation and development of clusters in the regional economy are determined by the system direction, economic and statistical, calculation and design methods. As a research method, calculations of localization coefficients were used to assess the potential for clustering of the construction sector of the economy in the city of Astana, coefficients of per capita production of the region and coefficients of specialization in the construction industry of the region (Abdyrov and Toktogulova, 2017).

In this case, we are considering the process of creating and developing a cluster in the field of Russian construction. The focus is on assessing the innovation potential of building materials clustering. To do this, a quantitative analysis is carried out to determine the availability of favorable conditions for the formation of the necessary cluster.

In the economy of the domestic region, indicators for calculating localization coefficients, per capita production coefficients in the region and specialization coefficients in the field of construction are used as the main methodology for clustering the construction industry and quantifying the potential of the construction cluster (Table 1).

Table 1 – Methodology for assessing the potential of the cluster of construction materials in the economy of Kazakhstan

Computational indicators	Comment	Calculation formula
1. The coefficient of localization of production of the construction materials	The coefficient of localization of production of the construction materials industry is defined as the ratio of the cost of products of this industry produced in the country to the total production of these products in the country. This indicator allows us to assess the degree of dependence of the country's economy on the import of building materials and determine the possibilities for the development of domestic production.	$K_L = (q_r / Q_R) \times 100\% / (q / Q) \times 100\%$ <p> q_r – quantity of construction materials in the region; q – total quantity of construction materials in the country; Q_R – quantity of manufacturing industries in the region; Q – total quantity of manufacturing industries in the country. </p>
2. The coefficient of per capita production of construction materials in the region	The coefficient of per capita production of construction materials in the region is defined as the ratio of the total production of construction materials in a given region to the population of this region. This indicator allows you to assess the efficiency of the use of labor and production capacities in the construction industry. It can be used to compare different regions with each other or to analyze the dynamics of the industry in the same region over a certain period of time.	$K_{\text{д}} = (q_r / Q_R) \times 100\% / (H_R / H) \times 100\%$ <p> q_r – quantity of construction materials in the region; q – total quantity of construction materials in the country; H_R – total population of the region; H – total population of the country. </p>
3. The coefficient of specialization of the production of the construction industry in the region	The coefficient of specialization of the production of the construction industry in the region is defined as the ratio of the volume of products of the construction industry to the total volume of gross regional product in this region. This is a measure that is used to estimate the degree of concentration of production in a particular industry in a given region. It allows you to assess how much the region depends on one particular sector of the economy. The higher the specialization coefficient, the greater the region's dependence on this industry.	$K_S = (q_r / Q_R) \times 100\% / (GDP_R / GDP) \times 100\%$ <p> q_r – quantity of construction materials in the region; q – total quantity of construction materials in the country; GDP_R – gross regional product of the region; GDP – gross regional product of the country. </p>
Note – (Abdyrov, 2019) compiled by authors using literature		

If the calculated values of the assigned factors exceed one, then this industry is considered a market specialization industry. When forming clusters and determining the most important directions, the dynamics of coefficients of localization of production of the construction materials should be analyzed. The increase in these indicators over time indicates the priorities for the further development of clusters the same territory, while their decrease cannot be considered a possible priority.

Results

To assess the effectiveness and potential of introducing clusters into the economy of the construction industry of Kazakhstan, we must choose a certain type of economic activity in the manufacturing industry of Astana, namely «production of other non-metallic mineral products». This choice is due

to the fact that Astana is one of the leading cities in the country in terms of contribution to the gross regional product and the number of enterprises engaged in the production of building materials and products from them. According to official statistics of Kazakhstan, this activity is classified as «production of other non-metallic mineral products».

To analyze the economic efficiency and determine the development potential of clusters in the field of production of construction materials in Astana and the republic as a whole, we need to obtain primary statistics for the period from 2018 to 2022. We would like to use information from official sources of national statistics, including data on production volumes of construction materials, gross regional product and population. This will allow us to conduct a comprehensive analysis and draw reasonable conclusions regarding the current state and prospects for the development of this industry (Table 2).

Table 2 – Initial data necessary for calculating indicators for assessing the economic efficiency and potential for the formation and development of clusters in the field of production of construction materials

Indications	Years				
	2018	2019	2020	2021	2022
The Republic Of Kazakhstan					
Volume of construction materials production, million tenge	601367	632437	732210	965149	1133391
Volume of manufacturing industry, million tenge	10427356	11573350	13232696	17121392	20697327
Population, people	18157337	18395567	18631779	18879552	19503159
Gross regional product, million tenge	61819536	69532626	70649033	83951588	101522984
Astana city					
Volume of construction materials production, million tenge	62971	70916	96154	143983	188203
Volume of manufacturing industry, million tenge	505132	527198	532216	734236	948678
Population, people	1030577	1136156	1184411	1239744	1354507
Gross regional product, million tenge	6705933	7834829	7975283	8923712	10444137
Note – compiled by the authors based on data from the National Bureau of Statistics of the Republic of Kazakhstan					

Thus, using the given statistical data, we can assess the potential for clustering of the industry of construction materials production in the region in the domestic economy as a result of the corresponding

calculations of localization coefficients, per capita production coefficients of the region and specialization coefficients in the construction industry of the region on the example of Astana (Table 3, Figure 1).

Table 3 – Evaluation indicators for the formation and development of clusters in the field of production of building materials in Astana

Calculation indicators	Years				
	2018	2019	2020	2021	2022
1. Production localization coefficients	2,16	2,46	3,27	3,48	3,62
2. Production coefficients per capita in the region	1,82	1,84	2,07	2,27	2,39
3. Coefficients of specialization in the construction industry of the region	1,00	1,11	1,16	1,40	1,61
Note – calculated by the authors based on the results of the research					

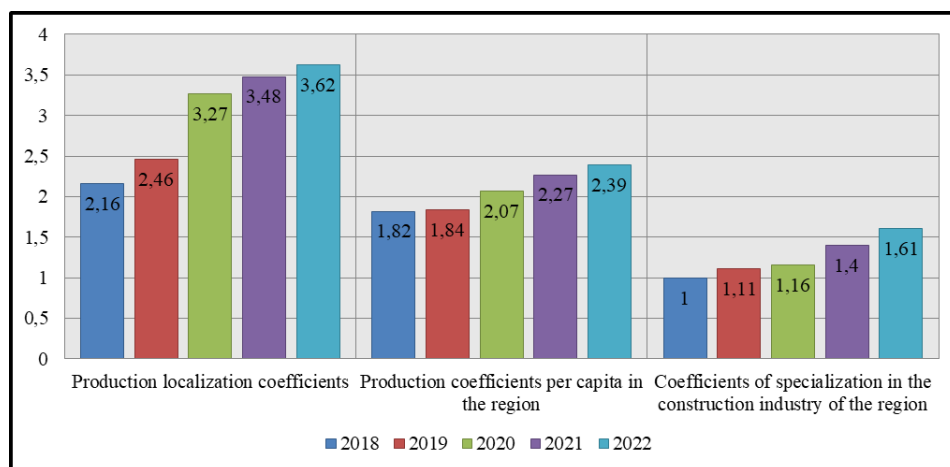


Figure 1 – Trends in indicators of calculated coefficients for the production of building materials in Astana
 Note – calculated by the authors based on the results of the research

As we can see from Table 3, the obtained calculation results for 2018-2022 show that on the example of the city of Astana, the values of localization coefficients for the production of building materials, per capita production coefficients of the region and specialization coefficients in the construction industry of the region are higher than one and, in our opinion, the construction materials industry is the most developed compared to the national average.

The results of Figure 1 determine the values of the calculated coefficients increasing from year to year. In particular, in 2022, compared to 2018, localization coefficients increased by 40.3%, per capita production coefficients of the region by 23.0% and specialization coefficients by 61.0%.

The increase in the calculated values of the coefficients from year to year is explained by an increase in the production of building materials in the city of Astana, that is, in 2022 we observe an increase in its volumes by 125,232 million tenge and to a relative extent by 66.5% by 2018.

Discussion

From our point of view, even if a positive trend has been observed in the production process over the specified years, it is necessary to identify a number of possible factors that limit the production activities of domestic building materials and have a priority impact on the development of the production sector. Such factors include such factors as limited resources, competitive imports, lack of qualified personnel, administrative barriers and climatic conditions (Figure 2) (Dosmaganbetov and Aliyev, 2019).

The «competitive import» factor is a special case here. After all, according to our forecasts, the range of domestic products in the field of construction materials, both in terms of volume and quality, may not fully meet the needs of the modern construction process of the region in question in the future.

In this regard, it is necessary to limit competing imports, increase the volume of production and improve the quality of construction materials.

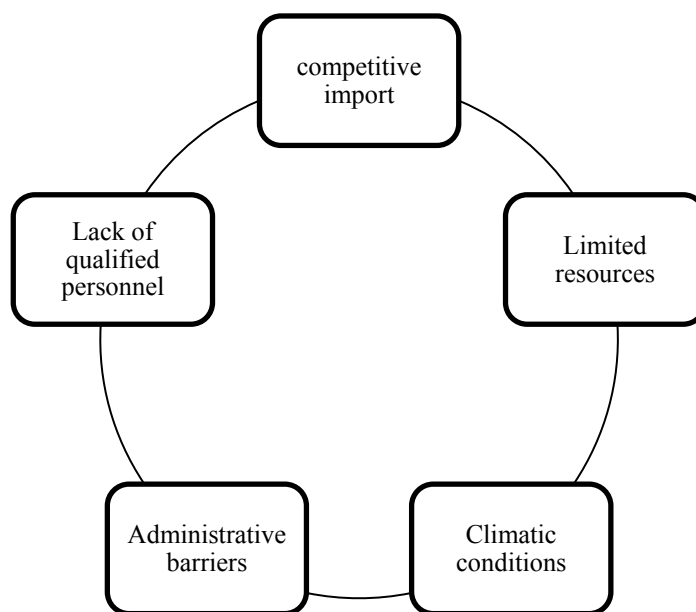


Figure 2 – Possible factors limiting the production of building materials
 Note – (Dosmaganbetov and Aliyev, 2019) compiled by authors using literature

The obtained calculations and results helped to conclude that the production of building materials in Astana is more developed than the average in Kazakhstan. Thus, in this sphere of production, it is most appropriate to implement a clustering system at the level of the region's economy. As a result, in connection with the

action plan adopted by the government decree, projects were carried out to launch pilot clusters in sectors of the domestic economy of strategic importance.

In particular, it was considered necessary to create and develop a cluster of “construction materials” in the territory of Astana for its studied

potential. So, we consider the scope of this region as an object of study.

Astana is known for its developed industrial sector producing construction materials. This sector ranks second in Kazakhstan and plays a key role in stimulating the city's economic growth. The production of building materials is a fundamental component of the construction cluster. It is important to note that during the implementation of this idea, within the framework of the development of the construction cluster in the city of Astana, a large industrial zone for the production of construction products and structures was created. Currently, various types of construction products are produced and actively developed on the territory of the industrial zone, such as commercial concrete, dry building mixtures, furniture, wooden products for construction, the production of frame houses,

reinforced concrete structures and others. Given these circumstances, it is important to emphasize the need to develop our own production of construction materials in Astana. This will satisfy the growing demand for civilian housing and expand the range of domestic products. In addition, it will contribute to the development of the city's economy and its innovative infrastructure. Thus, the creation and development of a cluster of construction materials in Astana seems extremely important.

The creation and development of a construction cluster in Astana is a reasonable response to changing business conditions, increased competition from potential competitors from other regions, as well as consumer requirements for the quality of products and services. The construction cluster differs from other forms of association of enterprises in its wide composition and a large number of goals (Figure 3).

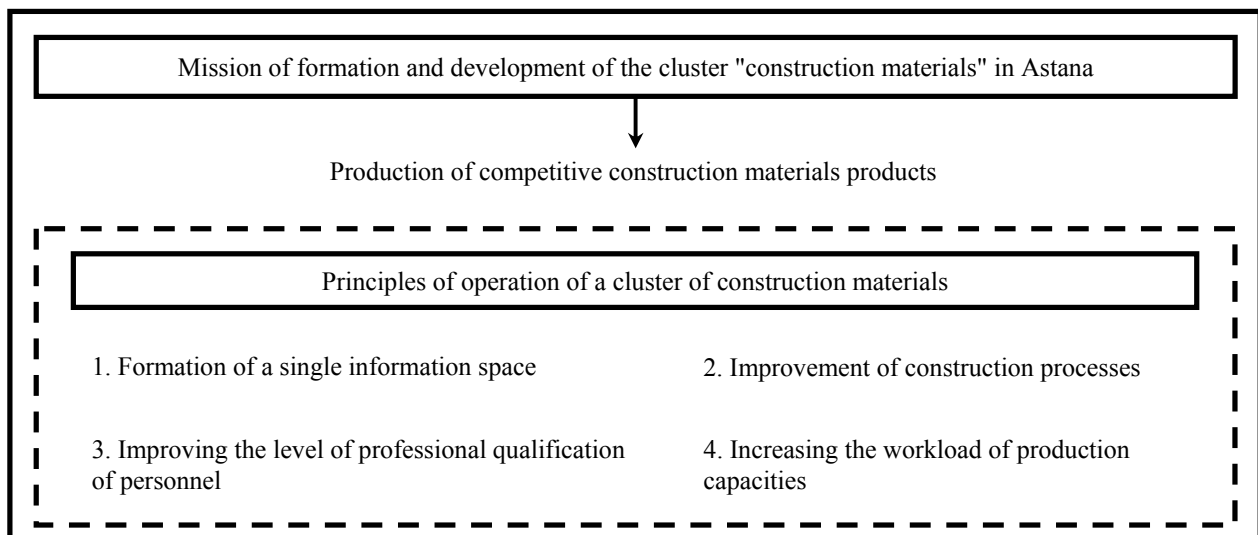


Figure 3 – System of goals and principles for the formation and development of the cluster «construction materials» in Astana
 Note – Compiled by the authors

In our opinion, as the results of the assessment of the potential for the and development of a cluster of construction materials in Astana show, in order to characterize the effective way of functioning of the cluster in the region, it is necessary to create a cluster management company and form and present its system (Figure 4).

The study shows that a cluster management company is essential for the efficient functioning of a building materials cluster. This company is responsible for coordinating cluster projects and stimulating interaction between cluster members, both within it and with other clusters. Thus, the management company plays a key role in ensuring the successful operation of the construction cluster.

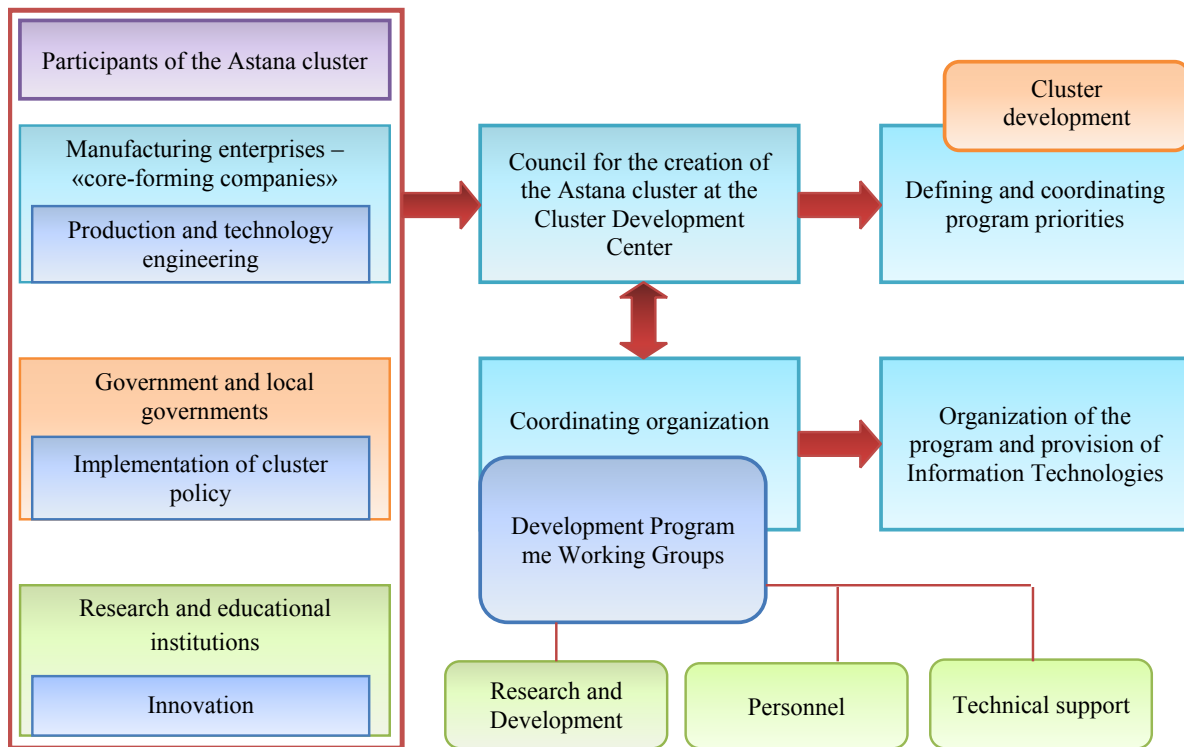


Figure 4 – Management system of the mechanism of formation and development of the cluster «construction materials» in Astana
 Note – Compiled by the authors

The functions of the construction cluster management company (cluster Secretariat) should be entrusted to a non-profit partnership created for this purpose. To achieve its goal, the cluster management company must clearly fulfill the following tasks as part of the development of the construction cluster:

1. analysis of the potential of the city economy within the framework of the construction cluster, determination of the composition of the cluster participants, determination of the directions and priorities of the cluster development. This task gives a complete picture of the current state of the industry and its prospects;

2. create conditions for effective interaction between enterprises, educational institutions, non-profit organizations, government agencies and investors. The purpose of such cooperation is the development of a territorial cluster and the successful implementation of joint projects. It is important to ensure support from all stakeholders in order to achieve maximum effect from cooperation;

3. creation of information consulting and service systems aimed at supporting innovative areas of newly created and developing types of business within the cluster;

4. linking and integration of development strategies of Astana for different periods with strategies, programs and concepts of cluster development.

A cluster Council should be formed under the management company, which may include representatives of the cluster’s participating enterprises, organizations of the innovative development infrastructure of the city and scientific and educational institutions.

According to our forecasts, in the future, the construction cluster Council will become a permanent collegial, advisory body created to solve the problems of cluster development. The Construction Cluster Council plays an important role in the development of the socio-economic potential of Astana. It promotes effective interaction between government agencies, local governments, public organizations, commercial and non-profit enterprises. One of the key tasks of the council is to support the creation and development of new production facilities in the construction materials industry. This helps to strengthen the competitiveness of products produced in the cluster, and stimulates the introduction of innovative technologies in the real sector of the city’s economy.

Thus, based on the calculations made during the study of the problem and the estimates obtained,

we can conclude that the sphere of production of building materials corresponds to the cluster type, the cluster has all the necessary potential participants, and therefore its creation in Astana is possible and desirable.

The results of the economic assessment of the clustering potential of the construction industry of the economy of Astana revealed the following key advantages:

1. The presence in the region of a significant amount of building materials necessary to create a cluster of industrial enterprises.

2. A complete value chain in the building materials industry, which ensures production efficiency and the ability to create a cluster.

3. A high level of interaction between the system of development of qualified personnel and personnel in the industry and its research institutions.

5. The presence of a developed infrastructure for managing innovations in the city's construction complex, which will affect the introduction of new technologies and increase the competitiveness of the industry.

6. Positive dynamics in the development of the building materials industry, which testifies to the stability and prospects of the industry.

7. The functioning of progressive legislation regulating innovative activities in the field of construction will create favorable conditions for the introduction of new technologies in this area.

8. The high level of demand for building materials products produced by industrial enterprises and the potential demand for innovative developments in this area, which stimulates the development of the industry.

9. The technological structure of the building materials industry meets modern requirements and allows the production of high-quality products.

10. Effective use of modern technologies in the construction industry will improve the quality of work performed and reduce the cost of their implementation in production.

11. Well-developed transport infrastructure facilitates the transportation of raw materials and finished products, which is important for the efficient operation of the cluster.

Conclusion

Thus, the results of the study show and confirm the existence of a large potential for the production of building materials in the city of Astana for the creation and development of clusters, as well as the positive value of the corresponding calculated indicators for assessing the potential of this industry. Thus, based on the results obtained, it can be concluded that the development of a cluster system in this area at the regional level is a completely reasonable step.

In our opinion, at the end of the study, important conclusions can be drawn and specific recommendations can be made based on the results of an assessment of the potential for the creation and development of a cluster system for the development of the building materials industry in Astana.

Final conclusions:

- the article considers the main aspects of formation of the cluster of building materials in Astana;

- the study showed that there is potential for building materials cluster in Astana city;

- key factors contributing to the formation of the building materials cluster in Astana were identified;

- identified problems that impede the effective functioning of the cluster of building materials in the city of Astana.

Specific recommendations:

- develop a strategy for the development of a cluster of building materials in Astana, which will take into account all key factors and solve existing problems;

- improvement of urban infrastructure to ensure the transportation of raw materials and a favorable logistics system necessary for the production of building materials in Astana;

- wide attraction of investments in the sphere of construction industry and implementation of effective urban investment policy;

- conduct additional research on the market of building materials in order to determine the needs of consumers and adapt production to these requirements;

- organize training and advanced training of workers in the construction materials industry in order to improve the quality of products and increase the competitiveness of enterprises.

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