

The principles of municipal industrial clusters' establishment on the territory of advancing social-and-economic development of mono-town

Olga Ivanova^{1*}, *Gennady Antonov*², *Sergey Bereznev*³

¹ Institute of Economy and Management, Kemerovo State University, 650000 Kemerovo, 6 Krasnaya St., Russia

² Institute of personnel training and retraining, 650000 Kemerovo, 13A Michurina St., Russia

³ T.F. Gorbachev Kuzbass State Technical University, 650000 Kemerovo, 28 Vesenniyaya St., Russia

Abstract. Overcoming social-and-economic problems of single-industry towns by diversification of their economy is possible by creating territories of advancing social and economic development (TASED). In contrast to the researchers claiming that the formation of a cluster with participation of enterprises of more than one municipal territory strengthens mono-profile of town, the authors justify synergies effect from using advantages of TASED and-cluster approach in diversification of single-industry towns' economy. Regional (municipal) industrial cluster, in contrast to the previously known concepts, the authors consider to be formed with an active role of the regional and municipal authorities for implementing projects of mono-town economy diversification and investment projects that meet the requirements of TASED. As a result of problems and risks systematization concerning clusters' functioning in Russian and foreign practice the basic principles of building clusters on TASED in mono-towns were defined. The research results present a contribution to the cluster theory, the regional economy in terms of methodology development of building regional (municipal) industrial clusters within TASED for economic diversification of mono-town economy. The practical value of the study lies in the possibility of using the results of work in the activities of regional and municipal authorities in the formation of cluster as residents of TASED in single-industry towns.

1 Introduction

Reducing the number of single-industry towns included in the list approved by the state, from 335 in 2009 to 319 in 2015, is not accompanied by a decrease in the number of accumulated problems. In addition, 148 single-industry towns are areas in which there are risks of worsening economic and social situation. The way out of these difficult situations is the establishment of TASED in single-industry towns. TASED along with clusters, special

* Corresponding author: ivanova@mail.ru

economic zones are considered to be the mechanisms to stimulate industrial and innovative development. In economic literature there is an opinion that the clustering of enterprises with the participation of more than one municipal area intensifies mono-profile of the town. But the practice shows the positive experience of regional clusters, for example, being developed with a state support automobile industrial cluster in the Kaluga region. So it makes sense to say that on TASED in mono-towns it is possible to identify and develop the union of enterprises with the potential to be transformed into regional clusters. Up to now there is no experience of establishing clusters in the framework of programs for creation TASED in mono-towns, there is no concept of cluster applying to the forms of business organization for the development of TASED in single-industry towns. The liberal model does not associate cluster with a special economic zone. However, it is possible to assume that the provision of favorable conditions for business development, for example, TASED, will become a factor stimulating the birth and development of clusters as residents of such territories. This determines the relevance and practical significance of this study.

2 Objects and methods

The object of our study is cluster projects, the experience in clustering in industry. The research of domestic and foreign scientists is mainly directed to the development of methods for clusters identification. But they do not evaluate the potential of businesses, in particular, single-industry towns, which can become a member of the cluster's core; the methods of clusters' establishment are equated only with the methods of their identification.

The development of principles of methodical approach to the formation of clusters on TASED in single-industry towns was based on the following theoretical concepts and research: the possibility of more efficient intra-control on the basis of inside information, the regulation and coordination of activities of combined entities as a result of the organization of intra-corporate financial market (the concept based on the in-house capital market); the effectiveness of establishing suppliers, manufacturers, consumers networks and technological cooperation networks (D. Ernst); the advantages of industrial networks formation, commodity chains, supply chains and value chains (E. Yourdon, M. Christopher, T.J. Gallin and M. Hendon, M. Garrett and P. Dyusyuzha).

3 Results and discussion

Cluster is a concentrated on a specific territory set of enterprises, interrelated, but belonging to different industries. M. Porter [1] pays attention to the interaction between the cluster participants (the main company-manufacturers, supporting (attendant) industries, universities, research organizations and government structures).

R. Brough defines a cluster as "cross-sectoral concentration of firms that creates jobs, exports goods and services, has common basic economic needs and brings together public sector of economic development, universities, colleges, educational community, funds and all other stakeholders" [2].

Established on TASED of mono-town regional (municipal) industrial cluster is proposed to consider as: the tool of industry structuring and its network organization; the union of organizations formed to implement economic diversification and investment projects for mono-town that meet the requirements of TASED; networking of enterprises and organizations connected by the production relations on the territory of mono-town; the kind of territorial cluster, the regional industrial cluster, industrial district. We consider it necessary to highlight its main features: local economic structure, where the interaction of social-and-cultural and production-technical factors takes place, ensuring their

competitiveness and dynamism; the combination of competition and cooperation, market and organization; the form of industrial organization characterized by the concentration of economic and entrepreneurial activity and limited by the municipal district, urban district; participants are mono-town's enterprises specializing in the production of competitive products, suppliers of raw materials, services, the cluster's infrastructure creating the final product and value added; the internal competition that distinguishes cluster from integrated entities.

To the most successful and dynamic clusters formed by means of creation the special economic zones, technological parks and business incubators can be referred the following clusters in mono-towns: motor industry cluster in Tolyatti and Naberezhnye Chelny, "Titanium Valley" in Verkhny Ufaley in the Sverdlovsk region, chemical cluster in Nizhny Tagil, timber cluster with the latest technology in Sokol city in the Vologda region and others.

The most important factors in the effective clusters' functioning are: management quality [3]; mechanisms and forms of organization for the accumulation and dissemination of knowledge and accumulation of social capital [4]; the presence of at least 30-50 specialized companies in a cluster to implement the diffusion potential of innovations.

To describe the community of technologically interrelated sectors in France term "die" [5] is widely used. It is a form of interaction with the features of innovative clusters. The term «clusters of innovation» has gained wide popularity among the public and private sector leaders in the United States after the establishment of the cluster which was called «Clusters of Innovation» [6].

The methodology and implementation of cluster policy in Russia as a whole correspond to the conceptual framework similar to the European programs, particularly French and German. Since 2012 the RF Ministry of Economic Development has conducted competitive selection of projects for the development of clusters in the regions of Russia. The competition was attended by about 100 cluster initiatives, 25 of them were selected for the pilot support. During 2013-2014 for the development of clusters on co-financing conditions from regional budgets 3.8 bln rubles were provided from the federal budget. For example, an innovative regional cluster in the field of information and communication technologies in the Novosibirsk region has received 269 million rubles, and the cluster of information technologies in St. Petersburg - 1.3 mln rubles. The average cluster size for subsidies amounted to about 100 million rubles. The analysis of study results of Russian pilot innovation clusters conducted in 2015 by the method of European initiatives of improving clusters indicates that the clusters are located mainly in Russian regions with a high level of innovative development (from 21 examined clusters 13 (62%) are located in the regions - "strong innovators", 5 (24%) - in the "medium-strong innovators", 1 cluster is in the region - "medium in-innovator" and 2 (9.5%) - in the "medium-weak innovators"); in new sectors (information technologies, biopharmaceuticals and new technologies) there are 11 clusters, whereas 12 clusters can be referred to the traditional high-tech industry the foundation for which was laid during the Soviet era.

The limits for the development of clusters in Russia became not only a lack of knowledge and inability to use the world experience in the local environment, focus on obtaining quick results, difficulties in finding investments and worn out fixed assets, personnel problem, but also weak strategy elaboration in choosing the development priorities.

Often, as the key points of growth all sectors of the territory are selected which leads to the dissipation of forces, the lack of resources for the implementation of all projects. The problem of weak innovation of the formed clusters is significant.

The world experience shows that the formation of clusters exclusively by the initiative of the state is one of the main risks - neglect of the business development trends, as well as

its economic interests. Artificially built cluster exists only as long as it has government support. Due to the artificiality of some clusters considered by the regional authorities as an instrument of public support in Russian clusters there is little horizontal communication, co-operation among the participants is not developed. Russian risks of cluster approach coincide with the risks described by the foreign experts. In particular, the T. Man-Wen and R. Voyer [7] highlight the most significant risks which foreign governments face in establishing and promoting the development of clusters: changing macroeconomic conditions, weak innovation character of clusters due to the lack of production mechanisms and adaptation of new knowledge, insufficient development of internal and external scientific and technological relations which weakens the synergetic effect of clustering, the use of inefficient management techniques.

The program of establishment and development TASED in mono-town requires the list of economic activities that can be internal points of growth. Obviously, in mono-town there can be formed clusters around one or a group of companies. Using cluster approach to the development of the program TASED in mono-towns one should consider not only the international experience of cluster management "European Cluster Excellence Initiative", the results of research of government management practices in industrial clusters, the processes of formation of business clusters and high-tech clusters [8-15], but identified during the national experience study of clusters' functioning their sustainable development factors.

Backgrounds for the regional (municipal) industrial clusters within TASED of mono-towns are: the lack of enterprises' own possibilities for the effective organization of production activities on the innovation basis; the need for diversification of the economy; demand for the modernization of production facilities; import substitution and the possibility of using favorable conditions for development of private entrepreneurship.

The scenario approach to the establishment of municipal clusters within TASED presupposes priority of "top-down" movement with the initial development of the cluster's strategy and its support within TASED. For example, M. Wickham [14] considers the role of the state in the creation of clusters as the most important. In addition, it was noted [15], that more often the initiators of cluster's establishment are governments (32%), business (27%) and together business and government (35%), financing for clusters' initiatives by the state (54%), business (18%), and together business and government (25%).

The basic principles of regional (municipal) industrial cluster's establishment as a part of TASED in mono-towns are defined:

1) Selecting cluster to assess the concentration of enterprises conducting profile, related and supporting activities, as their high value promotes innovations (priority for support of mono-towns on TASED is given to clusters operating in sectors that have economic indicators considerably exceeding the average in the country);

2) To use networking strategy in order to benefit from coordination network structures, adapting to changes, rapid response to changing market conditions, specialization, cost reduction;

3) To provide attractive conditions of urban environment for high-skilled personnel and innovative entrepreneurship in order to avoid the dominance of city-forming enterprises and to diversify the city's economy;

4) To set up specialized management companies implementing cluster management functions;

5) To use outsourcing, i.e. cluster formation through cooperation, involving a lot of independent companies and competition between them around the core businesses, including, for example, the city-forming enterprises, large factories;

6) To develop the internal competitive environment.

4 Conclusion

It was proposed to consider regional (municipal) industrial cluster on TASED of mono-town as a tool for industry and its network organization structuring, uniting the organizations to implement the economic diversification of mono-town and investment projects meeting the requirements of TASED. The features distinguishing regional (municipal) industrial cluster from the other types are systematized. It is proved that scenario approach to the establishment of municipal cluster within TASED is necessary and it should be based on priority "top down" movement with the initial development of the cluster's strategy and its support within TASED. The basic establishing principles of municipal industrial cluster as a part of TASED in single-industry town, which differ from existing by a combination of: the priority evaluation criteria when selecting the cluster being able to develop within TASED of mono-town; networking stage by stage; the use of TASED opportunities to create attractive conditions for urban environment; coordination of participants' strategies; outsourcing; the development of internal competitive environment as a form of competition among entities and the element of market mechanism introduced in the functioning and development of the cluster's system.

References

1. M.E. Porter, *Economic development quarterly*, **14(1)**, 15, (2000)
2. R. Breault, *Photonics Tech Briefs*, (2000)
3. European Cluster Excellence Initiative. The quality label for cluster organizations – criteria, processes, framework of implementation, **8**, (2015)
4. S.A. Rosenfeld, *Regional Technology Strategies* (Carrboro, North Carolina, USA, 2002)
5. J. Toledano, *Revue d'Economie Industrielle*, **6(4)**, 149 (1978)
6. M. Porter, *Council on Competitiveness, Monitor Company, Clusters of Innovation: National Report* (2001).
7. T. Munn-Venn, R. Voyer, *The Conference Board of Canada Report*, **32**, (2004)
8. B. Derudder, F. Witlox (editors) *Commodity Chains and World Cities* (Wiley-Blackwell, 2010)
9. R. Le Heron, *Agri-Food Commodity Chains and Globalising Networks (The Dynamics of Economic Space)*, **258**, (2016)
10. J. Michael, *Innovation clusters and interregional competition* (Springer Berlin Heidelberg, 2003)
11. M. Perry, *Business Clusters: An International Perspective (Routledge Studies in Business Organizations and Networks)* (Routledge, 2005)
12. P. Braunerhjelm, M.P. Feldman (editors) *Cluster Genesis: Technology-Based Industrial Development* (Oxford University Press, 2006)
13. J. M. Valdaliso, J. R. Wilson (editors) *Strategies for Shaping Territorial Competitiveness (Routledge Studies in Global Competition)* (Routledge, 2015)
14. M. Wickham, *CRIC Cluster conference. Beyond Cluster – Current Practices & Future Strategies* (Ballarat 2005)
15. The Cluster Initiative Greenbook: New Findings on the Process of Cluster-Based Economic Development. <http://www.cluster-research.org/greenbook.htm>