

Institutional Regulation of Clustering Processes and Innovative Development of Russian Regions

Dmitry L. Napolskikh

Abstract: *The article presents methodological features of two stages of cluster policy in Russian Federation, the purpose of which is to ensure the accelerated formation of innovative clusters in regions that are not covered by clustering processes, as well as the development of existing clusters. It is concluded that the current stage of cluster policy in Russian Federation is characterized by the priority application of administrative and program-target models. Russia's transition to the second stage of implementing the cluster development policy will require a transition to infrastructure-institutional and mediation models. Based on the regularities of production placement in the economic space of the country, author highlights main principles and directions of state regulation of clustering processes in the economic systems of Russian regions.*

Keywords: *models of cluster policy, institutional aspects of clustering, stages of cluster policy, methodological tools of clustering.*

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I. INTRODUCTION

Today, the external economic environment generates incentives to improve the mechanisms for regulating the clustering processes and innovative development of Russian regions in order to effectively implement the policy of import substitution at the regional level. The implementation of cluster policy in Russian Federation is aimed at the formation and development of innovative clusters-leaders in investment attractiveness of the world level. At the same time, the achievement of global competitiveness of Russian clusters is hindered by the low internal and interregional potential of the regions' economic systems (Dombrovskij, 2011). The lack of a stable consistent policy of interaction between government authorities and business in the framework of cluster initiatives, in turn, limits the opportunities for socio-economic development of the Russian regions.

Today, common problems of socio-economic development and clusterization of economic systems in Russian regions include:

- suboptimal nature of the territorial and sectoral structure of the distribution of productive forces in federal districts and regions of the Russian Federation;
- lack of complexity and proportionality of the development of Russian regions, the need for rational specialization of the regional economy within the national and global economic

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* Correspondence Author

Dmitry L. Napolskikh*, department of management and law, Volga State University of Technology, Yoshkar-Ola, Russian Federation Email: NapolskihDL@yandex.ru

systems;

- significant differences in the level of economic and social development of Russian regions.

At the present stage, the theoretical and methodological foundations for regulating clustering processes in the Russian economic science are at the stage of active development. At the same time, it should be noted that the unadapted application of foreign experience in regulating the processes of clustering and innovative development of regional economic systems to Russian realities is not a rational approach to the science and practice of state regulation of the economy (Kormishkin, Sausheva, Gorin, Zemskova, 2016). Accordingly, the need to reflection both global and Russian-specific problems of improving mechanisms for regulating clustering processes determines the purpose and objectives of this study.

The purpose of the research is to identify the main institutional problems and directions for improving the model of regulation clustering processes in the Russian regions. The research objectives are:

- definition of methodological features and tools of cluster policy for the current stage of economy development;
- identification of the main models of state participation in the formation and development of cluster initiatives;
- identification of principles and main directions for improving state regulation of clustering processes in the Russian regions' economic systems.

II. THEORETICAL AND METHODOLOGICAL BACKGROUND

A. Theoretical background

The theoretical basis of the research is concepts and hypotheses in the field of cluster theory, spatial development theory, theory of innovation and innovative development, theory of institutions and institutional transformations. The research is based on the dialectical method of scientific knowledge, which involves the consideration of economic relations in their relationship and development. A systematic approach was widely used, involving a comprehensive study and structural and logical ordering of the cluster as a complex economic system, and methods of structural and comparative analysis were also in demand. The solution of the postulated scientific problems required the use of such general theoretical research methods as abstraction and concretization, analysis and synthesis, induction and deduction, comparison and contrast.

The study of trends in the innovative development of Russian regions is based on the use of economic and statistical methods, in particular: methods of summary and grouping, and selective observation.

B. Methodological background

In international practice, cluster policy implementation is traditionally divided into two stages. At the first stage, the state policy to support cluster development focuses on the following set of scientific and practical tasks: development of the main forms, mechanisms and tools of cluster policy at the national and regional level; identification and classification of both existing clusters and protoclusters; definition of industry specialization and structure of intersectoral relations of clusters being formed.

At this stage, the methodological tools of such areas of scientific thought as economic geography and regional Economics are widely in demand. The solution of the above tasks requires the use of the following scientific methods: historical, economic and statistical, comparative and system analysis; systematization, including methodological methods of grouping, classification and typology, analyzed regional economic systems, clusters and their elements; zoning, cartography, etc.

At the second stage of cluster policy implementation, the state solves a wider range of management tasks, acting in various roles: initiator of clustering processes, main investor in cluster infrastructure, key customer of cluster enterprises' products, mediator and regulator of conflicts between cluster participants. The second stage involves solving organizational and economic problems of clusters and their residents. The role of the state in this case corresponds to such modern concepts of public administration as new public management and good governance (Morisson & Doussineau, 2019). An important task of state regulation is the formation of specialized organizations and institutions that implement the functions of supporting cluster development.

The second stage of implementation of the cluster development policy is typical for economically developed countries, which have achieved a high degree of clusterization of most sectors of the economy. The States implementing the second stage of cluster policy are: United States of America, Japan, United Kingdom, Germany, Austria, Switzerland, France, Italy, Sweden and Finland. The solution of the above tasks requires the use of the following scientific tools: project and program-target approach, balance methods for developing models of intersectoral and interregional development; economic and mathematical modeling, etc.

Today, the Russian Federation is faced with the task of actively applying the methodological tools of cluster policy to ensure the accelerated formation of innovative clusters within the first stage of cluster policy, which are not covered by clustering processes, as well as adapting the tools of the second stage for already functioning clusters.

III. RESULTS.

Cluster policy in the Russian Federation is characterized by a variety of institutional forms and regulators of clustering processes in the economic systems of Russian regions. According to the Russian Cluster Observatory, more than 110 cluster initiatives that have reached the level of development of a full-fledged cluster are being successfully implemented in Russia today. These clusters include more than three thousand legal entities that employ more than 1.3 million people as participants. In modern conditions of development of the Russian economy, Federal Executive authorities retain a leading role in the formation and implementation of clusters. More than half of the successfully functioning clusters included in the cluster registry of the Russian Cluster Observatory are supported under Federal programs (Russian cluster Observatory, 2020)

Over the past decade, the main resource administrators under cluster policy have been the Government of the Russian Federation, the Ministry of economic development of the Russian Federation and the Ministry of industry and trade of the Russian Federation. The starting point for the institutionalization of cluster policy in Russia is the "Concept of long-term socio-economic development of the Russian Federation until 2020", approved by government Decree No. 1662-R of November 17, 2008. The concept of a defined "transition to a new model of spatial development of the Russian economy and the creation of a network of territorial-production clusters, realizing the competitive potential of the territories" and "the formation of a number of innovative high-tech clusters in European and Asian parts of Russia and the creation of tourist and recreational clusters in areas with unique natural resources and natural landscapes, and rich historical and cultural heritage".

It should be noted that already at the initial stage of institutionalization of Russian cluster policy, the basic strategic document identifies three types of clusters:

- territorial production clusters;
- innovative high-tech clusters;
- tourism and recreation clusters.

However, the Concept itself does not define these types of clusters and does not distinguish their features. The division of cluster types given in the concept is important for understanding further trends in state regulation of cluster development. The main stages of implementation of the state cluster policy are described in table 1.

Table - I: Main stages of implementation of the state cluster policy in the Russian Federation

Stage of cluster policy and year of initiation	Coordinator of state support measures	Main goals of cluster policy	State support measures
The formation of centers of cluster development (2010)	Ministry of economic development of the Russian Federation	Identification of cluster initiatives, coordination of projects for the development of innovative territorial clusters; ensuring cooperation between participants of territorial clusters; increasing the number of small and medium - sized businesses-participants of territorial clusters.	Providing subsidies to a region for the implementation of measures for the creation and development of cluster development centers
Development of innovative territorial clusters (2012)	Ministry of economic development of the Russian Federation	Strengthening the transfer of innovative technologies to the real sector of the economy, integrating enterprises, scientific and educational organizations of clusters within an innovation ecosystem	Subsidies to regions for co-financing activities for the development of innovative territorial clusters that have passed the competitive selection process
Development of industrial clusters (2015)	Ministry of industry and trade of the Russian Federation	Development of the Russian industry and increase of its competitiveness based on the implementation of the following tasks: reloading of industrial capacities, growth the number of high-performance jobs, localization of production, etc.	Reimbursement of expenses for leasing payments, technological equipment, development of design documentation, product testing, etc.
Development of innovative clusters - leaders of world-class investment attractiveness (2016)	Ministry of economic development of the Russian Federation	Faster economic growth, export of high-tech products and commercialization of technologies, increasing labor productivity and creating high-performance jobs.	Using the status of a special economic zone and the territory of advanced socio-economic development ; promoting integration of territories into the development programs of suppliers of large companies with state participation; promoting cooperation with foreign partners.

Developed by the author based on open data from the Russian Cluster Observatory

In 2010, the Ministry of economic development launched a program to create cluster development centers in Russian regions. The program covered 33 regions of the Russian Federation where regional cluster development centers were established. The project was implemented jointly with the subjects of the Russian Federation on the basis of a subsidized approach, the total budget of the program for the period from 2010 to 2016 amounted to 1.06 billion rubles.

The creation of cluster development centers has become an important stage in the institutionalization of economic clusterization processes at the regional level, forming a basic list of regions that are active participants in cluster policy, and subsequently receive support for cluster initiatives from the Federal center (33 subjects of the Russian Federation out of 83 in 2010). We note that the coverage of the country's regions under this program is not wide enough. Currently, only 44 regions of the Russian Federation have fully formed clusters on their territory. The main functions of cluster development centers are:

- provision of organizational and technical services and infrastructure support for organizations participating in cluster initiatives;
- provision of legal consulting and marketing services (business registration, marketing research, development of business plans, etc.) to cluster participants;
- holding events aimed at the economic development of the territory, supporting small and medium-sized businesses (exhibitions, fairs, presentations, etc.);
- organization of interaction with scientific and educational organizations, federal institutes of innovation support.

The second stage of implementation of the cluster policy by the Ministry of economic development of the Russian Federation was characterized by increase the scale of state support for cluster initiatives. Also at this stage, the profile of cluster initiatives supported by the Ministry, namely the development of innovative high-tech clusters, begins to be clearly traced. In 2012 the Ministry launched the first comprehensive program for the formation and development of innovative territorial clusters within the framework of the cluster policy. The total cost of implementing the program from 2013 to 2015 amounted to more than 5 billion rubles. The main priority of this stage of cluster policy was to strengthen the transfer of innovative technologies to the real sector of the economy and to integrate enterprises, scientific and educational organizations of innovative clusters within an innovation ecosystem. From the point of view of spatial aspect, the program of support for innovative territorial clusters covered territories with already established high scientific, technical, infrastructure and industrial potential.

The third stage of implementation of the cluster policy by the Ministry of economic development of the Russian Federation is the project "Development of innovative clusters —leaders of world-class investment attractiveness", initiated in 2016. A distinctive feature of this stage of cluster policy is the active use of methodological tools for project management. The main tasks of innovative clusters-leaders of investment attractiveness of the world level are:

- achieving global "growth points" within the industries and markets of the future;
- intensification of processes of generation and diffusion of innovations within the regional innovation systems;
- growth of volumes of export of Russian high-tech products and its share in GDP;
- increasing the share of high-performance jobs at the regional level and creating technological prerequisites for productivity growth.

In parallel, state measures to support cluster initiatives are implemented within the framework of the industrial policy of the Russian Federation, implemented by the Ministry of industry and trade. In 2015, a register of "industrial clusters" was compiled, which represent a separate institutional form for implementing cluster initiatives, established by Federal Law No. 488-FZ of 31.12.2014 "Industrial policy in the Russian Federation". Since 2016, the Ministry has been providing large-scale subsidies for cluster development processes, in particular, covering the costs of technological re-equipment of production and the creation of new projects within the framework of the import substitution policy.

IV. DISCUSSION

Let's consider the main models of state participation in the formation and development of cluster initiatives, based on the functions of cluster policy developed by M. Enright (2000):

1) administrative model – public authorities actively interfere in the processes of cluster development by including organizations with state participation in clusters, administrative restrictions and various tools of budget policy (grants, subsidies, etc.);

2) program-target model – public authorities implement regional development programs and projects based on the external effects of cluster formation, distributing a significant amount of various support measures through clusters, and state participation in cluster management is based on mutual agreement of development programs;

3) infrastructure-institutional model - public authorities create innovative and engineering infrastructure facilities, as well as technological platforms and development institutions on the territory of the region, creating an environment for investment and cluster development based on market mechanisms;

4) mediation model – public authorities perform the function of intermediaries between potential cluster participants and the main stakeholders of cluster development of the territory, state participation in cluster management and budget support for clustering processes is reduced to the minimum necessary to overcome "market failures".

The current stage of cluster policy implementation in the Russian Federation is characterized by the priority application of administrative and program-target models. According to the authors, Russia's full-fledged transition to the second stage of implementing the cluster development policy will require a transition to infrastructure-institutional and mediation models. This is due to the fact that the key to the success of cluster initiatives for economic development of regions is the institutional environment (business culture, the level of development of market relations and the legal system), as well

as the prevailing concept of state regulation of the economy (the degree and methods of state intervention in market mechanisms). From the point of view of goals and methods of state support for cluster development, there are two main models of cluster development: Anglo-Saxon and continental.

The continental model of cluster policy, mainly presented in European countries (France, Norway, Sweden, etc.), and has a strong theoretical base: the theory of growth poles (F. Perrou, 1954), the concept of industrial areas of J. Becattini (1992), the Scandinavian school of competitiveness (B. Lundvall, 1992). Within the framework of the continental model of cluster policy, a special place is occupied by the role of Central government that carry out the following tasks: development of cluster programs at the national level, financial support for cluster initiatives in priority sectors of the economy, creation of innovative infrastructure, etc. (Ketels, Lindqvist, Sölvell, 2016).

The Anglo-Saxon model of cluster policy, common in the United States of America and the countries of the British Commonwealth, is based on the theoretical provisions of the monetary concept of state regulation of the economy. The essence of this model is to consider the cluster as an independent market form of economic development, and the role of Central government is to minimize barriers to cluster development based on market mechanisms (including administrative ones), as well as limited support for innovative pilot clusters in priority sectors (Gusejnov, 2016). The main focus of cluster policy in this model is shifted to the regional level, the main tasks of regional executive authorities are joint development of innovative development programs with the main organizations participating in the cluster, the formation of the institutional environment and the investment climate of the territory.

For the Russian economy, a more traditional approach to state regulation is based on the continental model, the application of which is also justified by the insufficient level of development of market institutions and the current model of federalism. At the same time, it seems appropriate to adapt the Anglo-Saxon model for individual cluster initiatives in competitive industries in the territory of economically developed regions of Russia.

V. CONCLUSION

Today the Russian Federation faces the task of actively applying the methodological tools of the first stage of cluster policy to ensure the accelerated formation of innovative clusters in regions not covered by clustering processes, as well as adapting the tools of the second stage for already functioning clusters. At studying the processes of formation and development of clusters, in addition to the general scientific principles of scientific, objective, systematic and comprehensive research, it is necessary to adhere to the following methodological principles: the principle of taking into account the regional specifics of cluster development; the principle of practical realization of economic clustering models.

Speaking about the state policy of cluster development it is necessary to take into account the following patterns of production placement in the economic space of the country:

- priority placement of production near sources of electricity, raw materials and fuel, as well as markets for finished products;
- use of the economic benefits of economies of scale and geographical concentration, as well as the interregional and international division of labor;
- priority placement of production near agglomerations and in areas with developed transport infrastructure;
- priority development and further processing of economically profitable types of natural resources;
- high costs of development and integrated development of hard-to-reach areas and areas with extreme natural conditions (Northern zone, etc.).

It is determined that the current stage of cluster policy implementation in the Russian Federation is characterized by the priority application of administrative and program-target models. According to the author, Russia's full-fledged transition to the second stage of implementing the cluster development policy will require a transition to infrastructure-institutional and mediation models. At the same time, it seems appropriate to adapt the Anglo-Saxon model of cluster policy as a whole for individual cluster initiatives in competitive industries in the territory of economically developed regions of Russia.

The following principles of state regulation of clustering of Russian regions are highlighted:

- rational sectoral specialization of the cluster, depending both on the specialization of the regional economic system and on the priorities of the division of labor across the country;
- optimal concentration of productive forces on the territory of the cluster, depending on the planned volume of production;
- high degree of integration of production within the cluster and the complexity of its development;
- achieving the necessary degree of diversification of the region's economy through the formation and development of innovation clusters;
- optimal organization of the settlement structure, transport and engineering infrastructure within the cluster borders, rational use of the external effects of cluster development for the region as a whole;
- development of interregional and international economic relations based on high competitiveness of cluster enterprises.

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AUTHORS PROFILE



Dmitriy Napolskikh, is candidate of Economics Sciences, Associate Professor at the Chair of Management and Law, Volga State University of Technology. Research interests –regional economy, clusters development, institutional economy. He has written original research articles in various international journals and he is interested in academics and research.