

Institutional Foundations of the Process of Clusterization of Russian Regions' Economies

Fundamentos institucionales del proceso de agrupación de economías regionales rusas

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Received: xx/04/2018 • Approved: xx/05/2018

Content

- [1. Introduction](#)
 - [2. Methods](#)
 - [3. Results](#)
 - [4. Discussion](#)
 - [5. Conclusion](#)
- [References](#)

ABSTRACT:

One of the most topical trends in the development of present-day society is the growing role of network communications. Network resources are becoming a new source of competitive advantage for regions, and, in essence, appear to be transforming not only the system of factors for industrial siting but the structure of the economic space itself. A major factor for the development of the network structure of the economic space and reinforcement of its unity and integrity is the implementation of the cluster-based form of organizing business activities. The international experience of developed countries convincingly substantiates both the effectiveness and the naturally determined inevitability of the emergence of various types of clusters. Clustering is central to state policy in the area of regional development in many countries around the world. Some of the key objectives in this policy include the development of the SME sector around large companies, creation of new jobs, and, ultimately, improvement of industry's innovation potential and the region's competitiveness. The 'Concept on the Strategy for the Long-Term Social/Economic Development of the Russian Federation through to 2020' lists detecting and stimulating the development of emerging territorial/production clusters as one of the most

RESUMEN:

Una de las tendencias más actuales en el desarrollo de la sociedad actual es el creciente papel de las comunicaciones en red. Los recursos de red se están convirtiendo en una nueva fuente de ventaja competitiva para las regiones y, en esencia, parecen estar transformando no solo el sistema de factores para la ubicación industrial, sino también la estructura del espacio económico en sí. Un factor importante para el desarrollo de la estructura de la red del espacio económico y el refuerzo de su unidad e integridad es la implementación de la forma de organización de actividades empresariales basadas en clústeres. La experiencia internacional de los países desarrollados confirma de manera convincente tanto la eficacia como la inevitabilidad naturalmente determinada de la aparición de diversos tipos de conglomerados. La agrupación es fundamental para la política estatal en el área del desarrollo regional en muchos países del mundo. Algunos de los objetivos clave de esta política incluyen el desarrollo del sector de las PYME en torno a las grandes empresas, la creación de nuevos puestos de trabajo y, en última instancia, la mejora del potencial de innovación de la industria y la competitividad de la región. El 'Concepto sobre la estrategia para el desarrollo socioeconómico a largo plazo de la Federación de Rusia hasta 2020'

significant areas for the creation of a nationwide system of support for innovation and technological development, which would ensure Russia's breakthrough into world markets for high- and medium-tech products. The formation of clusters in a region may not only help resolve sectoral objectives but facilitate the multipolar distribution of growth areas throughout the region, thereby ensuring even and well-balanced spatial development.

Keywords: regional economy, territorial/production cluster, innovation, cluster as a market institution.

enumera la detección y el estímulo del desarrollo de agrupaciones territoriales / de producción emergentes como una de las áreas más importantes para la creación de un sistema nacional de apoyo a la innovación y al desarrollo tecnológico, lo que garantizaría el avance de Rusia en los mercados mundiales de productos de alta y media tecnología. La formación de conglomerados en una región puede no solo ayudar a resolver los objetivos sectoriales, sino también facilitar la distribución multipolar de las áreas de crecimiento en toda la región, asegurando así un desarrollo espacial uniforme y bien equilibrado.

Palabras clave: economía regional, clúster territorial / de producción, innovación, clúster como institución de mercado.

1. Introduction

Issues related to improving the quality of products, boosting the efficiency of economic activity, as well as cultivating robust organizational culture and building cohesive social/economic systems, require adopting an integrated and multiaspect approach one of the potential priority areas wherein is support for self-organization processes which lead to the formation of regional clusters as drivers of the region's growth and competitiveness. The cluster-based form of organizing economic entities has already demonstrated its substantial benefits in the form of boosts in the competitiveness and competitive resistance of regional enterprises and the development of interorganizational cooperation and competition.

Currently, the lack of consensus regarding the category of economic clusters in global and Russian practice is the cause of much uncertainty in terms of both conceptualizing of the said phenomenon and managing clustering processes. The administrative construal of regional clusters entrenched in Russian practice is, on the one hand, manifestly predicated on including this form of organizing economic entities in the process of managing the development of the regional economy, with a focus, thus, being on the purposeful and deliberate use of clusters as new-type economic units intended to enhance both the nation's economic reality and the very management of economic processes. On the other hand, this entrenched way to construe clusters fails to imply the primary significance of the self-organization nature of the said phenomenon, precluding the nation from exploiting all of its potential for economic clusterization to the fullest. In this regard, one of the more topical objectives in Russia's present-day regional economic policy is shifting from direct and directive methods of managing the formation and development of economic clusters to indirect forms of backing self-organization trends (Dalinchuk 2010).

A special role in substantiating spatial development conceptually is played by M.E. Porter's cluster theory of competitive advantage. The theory has been elaborated as part of M. Enright's regional cluster concept. A substantial role in explaining clusters conceptually has been played by A. Marshall's theory of industrial districts, G. Becattini's theory of Italian industrial districts, the value chain and cluster combination concept, the learning region concept, as well as the works of D. Maillat, P. Krugman, and other scholars.

The findings from an analysis of research practice dealing with the subject of economic clusters (Organisation for Economic Cooperation and Development (OECD), 2007, 2011; Bundesministerium für Bildung und Forschung (BMBF), 2006) indicate a considerable increase in the number of works devoted to the various aspects of clustering, with the greatest amount of focus being on viewing clusters from a general theoretical perspective as a tool for strategic planning and regional policy, as well as empirical research on particular sectors and regions as clustering centers. However, despite increased researcher interest in the issue of effective organization of the regional economy through the formation of economic clusters, most research is more of a descriptive nature and is mainly oriented toward the analysis of specific clustering cases. In the literature, there currently lacks a well-defined and well-established methodology for identifying and typologizing economic clusters.

The purpose of this study is to substantiate a set of theoretical/methodological approaches to employing clusters as a market institution for the development of the economy of Russian

regions.

The study's key concept is predicated on the suggestion that an economic cluster is one of the forms of organizing territorial/sectoral business activity, is of a market nature, and may be viewed as a type of oligopolistic establishment within the regional market which is characterized by cooperation-focused relationships among the market's participants, with market competition persisting therein in part or in full.

2. Methods

The development of most territories is of a polarized nature, i.e. sooner or later in any homogeneous territory one will inevitably come to single out a number of growth poles, or centers of economic development. The deformation of space, its polarization around a leading sector (a "growth pole"), and a pole's interaction with its entourage have been examined in the literature in sufficient detail. At the same time, the macroeconomic approach to adopting a strategy for the development of region's economic space as a whole requires substantiating the principles of singling out an entire complex (network) of development poles, including beyond the region's central city, ultimately capable of ensuring the strategic development of the territory of the entire region (Gorin 2010).

A possible methodological basis for resolving this objective is the theory of polycentrism, which came into economics from the area of geopolitics. Some Russian researchers suggest using this theory in relation to the country's present-day spatial development, singling out, apart from Moscow and Saint Petersburg, other cities (e.g., Yekaterinburg and Novosibirsk) capable of becoming new nodal areas prepared to accommodate the movement of goods, capital, people, and information.

From the perspective of a country's spatial structure, polycentrism implies urbanized areas, urban agglomerations, and large cities being distributed across its territory relatively evenly. The key purpose behind polycentric development is to boost within a globalizing economy the competitiveness both of particular centers and of the entire country or an entire region within it via the minimization of interregional differences.

In the authors' view, the above theory's tenets are applicable to the intraregional level as well, since the potential of a region as a whole as a development center is determined by the internal well-balancedness and cohesion of its space, which implies the search for several development centers capable of pulling into their orbit, as much as possible, any nearby territories. These centers must wield some interterritorial influence through performing for neighboring territories a variety of functions, including those related to management, production, and education, attracting human, financial, and other types of resources and exerting thereby a great deal of influence on neighboring territories and the region as a whole. It is the capacity to perform these functions that will help create a network of interactions between the central territory and its entourage.

At the present-day stage of Russia's economic development, it is clustering that is most likely to facilitate the more effective exploitation of the network potential of a territory regarded as a development center. It is the cluster-based approach that helps "link" the center and its entourage via closer interfirm interaction; the creation of common labor markets, technology, and knowledge and improvement of enterprises' access to common resources; the reduction of common costs and cultivation of a synergetic effect from interaction. All the cluster participants gain additional competitive advantage under the cumulative influence of economies of scales and synergy. In addition, a cluster facilitates the development of horizontal network relationships, as well as partner interaction among the business sector, the government, the science sector, and the education sector (Ivanov, Krasnonosova and Oleinik 2008).

The integrating nature of the cluster-based approach as a tool for driving regional development also lies in the possibility of resolving a variety of objectives in an integrated manner, like those related to: a regional strategy aimed at boosting the competitiveness of the economy of a region and business entities within it; an industrial policy aimed at creating within a region a competitive industrial complex; shifting to an innovation-based

model of regional development, with a focus on cultivating a competitive environment, facilitating the development of small and medium-sized businesses, including based on interaction with large ones, boosting the level of education in the region, developing regional infrastructure, and other objectives.

Since the cluster is characterized by a major focus on innovation, facile transfer of information, knowledge, competencies, skills, and a combination of boosts in labor productivity and increases in the number of high-paid jobs, the institution appears to meet today's qualitative criteria for effective social development most appropriately at this time.

3. Results

3.1. Institutional foundations of the development and operation of economic clusters in Russia

Based on their study of the market-related and social fundamentals of clusterization, as well as Russia's current institutional platform for clusterogenic processes, the authors have drawn a set of key conclusions, some of which are provided below.

The cluster may be viewed as a variety of oligopoly.

Clusterization is a complex process that implies stage-by-stage implementation and requires control and management, which can be done through the creation of special external conditions (economic, organizational/legal, information, etc.) that will influence decision-making by economic entities.

There is a need to create proper legal conditions that would forbid monopolistic forms of market interaction, which can become possible as a result of cluster integration (in particular, anti-monopoly legislation).

As a result of clusterization as part of a cluster oligopoly, firms become more interdependent, and, in this regard, alongside competition there also emerges cooperation. Notice that, fundamentally, competition within a cluster takes on the nature of competition in ideas and technology. A crucial condition for cooperation and robust interaction is also the availability of a well-developed intracuster infrastructure.

The formation, development, and operation of competitive clusters as part of the regional economy is one of the more promising and effective ways to drive regional development through upturns in the competitiveness of products turned out by enterprises and boosts in these firms' competitive resistance, as well as based on the integrated nature of the area's development (Gromyko 2007).

The cluster may be regarded as a tool for the development of partnerships among the business, science, and education sectors, public authorities, and the regional general public.

The cluster is an integrated phenomenon that is influenced by various factors, like its sphere of operation, the market's structure, the agglomeration environment, the characteristics of territorial organization, and the social factor.

To create a cognitive analogue for a cluster establishment and determine the potential of clustering in the market environment, one could employ graph theory, cluster analysis, and some other methods of mathematical modeling.

Clusters may be formed both as part of the city economy and as part of the agglomeration environment, where the territorial organization factor is among those that are the more significant to the existence of a cluster, with the greatest disposition to clusterization evinced by decentralized agglomerations, while the actual process of formation and operation of clusters is known to facilitate the evening out of territorial development.

The intracuster environment, which is formed based on the region's business culture, facilitates the creation of relevant values and norms and models of behavior and their institutionalization.

In Russia, clustering is currently in the stage of finalizing its major mechanisms and regulatory framework, with interest in the formation of regional clusters increasingly

growing.

A clusterogenic field is comprised of a whole array of sectors within regional industry (including light industry, the food industry, machinery manufacturing, the petrochemical industry, processing of natural materials, etc.), with scenarios for a possible clusterization process and a running one varying considerably depending on the market's competitive conditions, the sector's capital intensity, the historical regional characteristics of economic management, and the characteristics of the technological chain (Islankina and Fiyaksel' 2015).

Thus, clusterization follows the path of partial oligopolization of the regional market space at each of the production levels of a potential cluster, with the strongest and most competitive market participants getting singled out. In this regard, the likelihood of this kind of core standing out depends directly on the initial density of the region's organizational space, due to which the clusterogenicity of the regional environment is largely determined by the number of participants in the regional market and the degree of their geographic concentration. Notice that, as a self-organization process, the actual formation of a cluster follows the path of simplifying the system's information structure and optimizing the number of market participants based on the principle of maximizing the dominant of any of the core clustering parameters. To form a cluster, apart from the environment's initial clusterogenicity, defined by the density of the organizational (and quite often the innovation) space, there is also a need for an external impetus in the form of state support or a change in the market conditions for operation, the technological paradigm, and other parameters influencing the volume of costs and the pricing mechanism (Kutsenko and Nechaeva 2015).

3.2. State regulation of clustering

The absence of the category of clusters in Russia's federal legislation is partially compensated for by its presence in the legislation of Russian regions which have already begun the process of putting in place a regulatory framework in the area of regional economic clusters. By analogy with federal legislation, in regional legislation clusters are viewed both as a tool for improving key indicators of regional economic development and as special-purpose facilities, the development of which requires the allocation of regional and federal resources and creation of special economic and organizational conditions (Kutsenko, Islankina and Abashkin, 2017b).

The similar layer of regulatory documents capturing the concept of regional clusters as a tool for boosting the efficiency of the regional economy and the special-purpose focus on their formation is made up of strategies for regional development and special-purpose programs. However, an analysis of data from regulatory documents existing in present-day Russian practice indicates that the category of clusters is not always defined in a clear-cut way and does not always carry the specificity of clusters proper with it, oftentimes intersecting with the concepts of science park and territorial/production complex (TPC), the latter having quite solid foundations in the history of economic development across Russian regions in the 20th century.

The practice of development of TPCs as an integrated unit incorporating several production chain links positioned in immediate territorial proximity to each other has largely substituted for the concept of clusters when it comes to putting together strategies and concepts related to cluster development. Having said that, a crucial distinctive characteristic of clusters is the existence of internal competition at one level of the production chain, as well as the legal independence of each of the cluster participants (Kutsenko and Nechaeva 2015). Likewise, an economic cluster is different from a science park, which is a type of special economic zone established for the purpose of creating and developing new progressive technology, as well as a property complex incorporating research, design, and production establishments with an information and experimental production framework and qualified research staff. The cluster's innovation component causes it to resemble the science park, but the former is not a single property complex.

The Russian tradition of assimilating clusters with science parks has led to the process of

special-purpose formation of a cluster field in Russian regions, by analogy with the special-purpose establishment of a TPC based on existing resources forming part of regional economic potential, key and the more large-scale regional production operations, as well as the degree of development of relevant infrastructure. Thus, a key parameter in making decisions on organizing a cluster are the availability in the region of well-developed production operation with a long track record and relevant potential in terms of natural and labor resources and fixed assets and with a sensible strategy for future development and prospects to expand its activity through integrating and interacting with other organizations. Notice that the availability of already established ties and cluster forms of interaction is not a key parameter, as, given Russia's present-day economic conditions, an economic cluster is mainly viewed as a potentially possible facility or an emergent one.

For that reason, at the official level it is customary to consider as possible cluster initiatives both groups of enterprises that are more or less in place already, with these companies actively exploiting their integration potential, *and* initiatives from large enterprises which make up the basis of GRP but are not always surrounded by a large number of other organizations interested in cluster-based interaction (in that case, the key parameters are the enterprise's resource and manpower potential, its track record and scale of operation, its significance for the region – but not necessarily the actual clusterogenic potential of the entire regional environment within that sector or adjacent sectors) (Silaeva et al. 2016).

The state's priority role in the process of formation of economic clusters in Russian regions is substantiated by that most clustering initiatives are initiated at the government level and are finalized in regulatory documents and new organizational/administrative establishments intended to facilitate the clustering process. Thus, for instance, the idea of clusterizing the nation's industry and infrastructural facilities has found reflection at the government level in presidential decrees aimed at boosting social/economic efficiency and improving the conditions for the operation of small and medium-sized businesses in Russia (Ministry of Economic Development of the Russian Federation, 2016; Resolution of the Government of the Russian Federation No.1662-r, 2008; Resolution of the Government of the Russian Federation No.2227-r, 2011).

The key focus in providing state support is on 25 pilot clusters of an innovative nature, predominantly in the area of pharmacology and technology related to power generation, nuclear energy, information, and aerospace, with most of these sectors known to have been initially supported through federal funding, while the current trend is, increasingly, towards public-private partnerships.

The choice of clusters to provide state support to is governed by a cluster's regional significance and scale of activity, as well as specific economic results expected from it. The limited number of clusters picked as pilot ones incorporates emergent and potentially possible clusters in different regions of Russia, with the clustering process begun in the first stage (planned to be completed before 2018), which implies putting these clusters in place and fostering their viability, expected to be carried on in the next stage in the form of the wholesale spreading of the clustering experience amassed, including in other regions of Russia and in spheres of economic activity characterized by smaller scale of activity. The actual management of the process is based on the hierarchical/vertical principle.

Despite the essential openness of clusters, which can be of a cross-border nature as well, there, nevertheless, is expected to be some kind of initial territorial "condensation core" around which the organization of a cluster space capable of attaining greater scale will be going forward. Despite trends toward cross-border positioning, a technique that has been firmly entrenched in Russia's cluster policy practice is the regionally oriented approach, which considers as an environment suitable for clustering the economic space within the administrative borders of a constituent entity of the Russian Federation (or a federal okrug as a macroregional unit). It is also worth taking into account that, along with regions, for particular types of cluster establishments a possible concentration core is the urban and agglomeration space, as a unit characterized by relative economic integrity, a well-established administrative governance system, a center of organizing the interests of the area's society and an object of sustainable development (Abashkin et al. 2017).

4. Discussion

4.1. Outcomes from the development of the nation's pilot territorial-economic clusters

2017 marked five years since the launch by Russia's Ministry of Economic Development of a program of support for pilot innovation territorial clusters, the vastest in scale among similar initiatives in Russia to date. Its ideology and design were developed factoring in some of the provisions set out in key strategic documents in the area of social/economic development and innovation.

Evidence from the analysis of top international and domestic best practices (Ketels 2013; Kutsenko, Islankina and Abashkin 2017a; Lindqvist, Ketels and Sölvell 2013) indicates that the cluster-based approach, which helps foster strategic dialogue between public authorities and the professional community, serves as a tool for stimulating innovation at the regional level, boosting the effectiveness of state policy through implementing integrated programs of support, and engaging development institutions. At present, cluster policy is being developed across the following key focus areas:

- providing support for joint projects by cluster participants instead of subsidizing individual enterprises;
- providing support for clusters in emerging industries and facilitating their orientation toward the search for unique niches in future markets;
- stimulating intercluster interaction, putting together cross-cluster projects, and systematically promoting them to external markets;
- shifting the focus from the development of particular clusters in a region to the management of the portfolios of clusters which are in different stages of development.

A significant factor for cluster development was providing special-purpose subsidies out of the federal budget to Russia's constituent entities where the pilot clusters were located. In the period 2013–2015, the combined volume of subsidies exceeded 5 billion rubles. More specifically, the government allocated 3.6 billion rubles toward the development of innovation and educational infrastructure in clusters, 951 million rubles toward personnel career enhancement and retraining and methodological, organizational, expert/analytical, and information support, and 432 million rubles toward the development of cooperation and promotion of products, including to external markets (business missions, trade fairs, communicative activities, etc.) (Kutsenko and Meissner 2013).

The program of support for 27 pilot clusters is the first national initiative of this kind that is this vast in scale. Its implementation has facilitated major boosts in the activity of cluster participant organizations. In the period 2013–2015, based on data from Russia's Ministry of Economic Development, the volume of production by way of clusters increased, in constant prices, by 429 billion rubles – to nearly 2 trillion rubles (the decisive contribution coming from the clusters of the Republic of Tatarstan, Kaluga Oblast, and Khabarovsk Krai). Against a backdrop of negative general economic trends, the enterprises demonstrated positive dynamics on a number of indicators, including a 10% increase in output per worker in real terms, an increase of more than 1/3 in new highly-productive jobs, and 40,000 employees undergoing training via professional development and career enhancement programs. The development of the pilot economic clusters became an essential factor for boosts in investment activity, with over 3.5 rubles brought in from nonbudgetary sources per each ruble invested out of the state budget to provide support for cluster participants and infrastructural facilities. All in all, in the three-year period investments from budgetary and nonbudgetary sources totaled 98 and 360 billion rubles, respectively. One has witnessed a boost in research cooperation among cluster participants, with the combined volume of joint research projects exceeding in the period 2013–2015 as much as 75 billion rubles (in 2013 constant prices) (Kutsenko and Islankina 2017).

Principal indicators of the development of the pilot clusters are significantly above the average values across the regions they are based in. More specifically, the participants' combined proceeds from sales in the external market are higher by an average of 20%, and

the volume of shipped innovative products of own manufacture and innovative works and services rendered by own efforts is higher by 60–90% (data from Russia's Ministry of Economic Development).

Concurrently, there were visible gaps among the clusters on the adopted roster on most of the key indicators. Thus, for instance, based on data from Russia's Ministry of Economic Development, at the year-end 2015 in only 6 of the 27 pilot clusters the number of participant organizations reached 130, with four of them numbering very close to 200 entities or having surpassed the mark altogether (the clusters of the Republic of Tatarstan and Tomsk Oblast and both clusters within Saint Petersburg). To compare, in other clusters the figure barely made it to 80, with some registering it at fewer than 50.

Regarding the combined number of personnel at participant organizations, it exceeded 20,000 in just 12 of the pilot innovation territorial clusters. The way here was led by the clusters of the Republic of Tatarstan (over 100,000), Arkhangelsk Oblast, Samara Oblast, the Udmurt Republic, and Moscow Oblast (Phystech-XXI) (over 40,000). The rest posted a much more modest figure – no more than 10,000 people.

The pilot clusters differed in activity efficiency as well. In only 12 of them, annual output per worker at participant organizations reached 2.5 million rubles (in 2015 prices). In the clusters of the Republic of Bashkortostan, the Republic of Tatarstan, Khabarovsk Krai, Arkhangelsk Oblast, Kemerovo Oblast, Leningrad Oblast, Nizhny Novgorod Oblast, and Saint Petersburg this indicator exceeded 4.5 million rubles. Thus, there was now a group of leading clusters among the pilot innovative territorial clusters, leading the way on a number of relative indicators and in scale of activity.

The second iteration of cluster policy resulted in selecting among a large number of clusters (about 40 across all of Russia) a total of 11 superclusters, which, in essence, are structuring Russia's innovation space at the moment. The selection process consisted of two stages. The first – at-a-distance – stage involved the examination of documentation and preparation of decisions, and the second one – a series of defenses of cluster development strategies (October 2016). The selection process involved assessing the current level of the cluster's development; the dynamics of planned values for target indicators; the degree to which the cluster program's activities have been worked out and are realistic in terms of attaining the target indicators. As a result, a roster was put together comprised of 11 participants in the Priority Project. The roster incorporated the innovation clusters of the Republic of Bashkortostan, the Republic of Mordovia, the Republic of Tatarstan, Krasnoyarsk Krai, Tomsk Oblast, Kaluga Oblast, Lipetsk Oblast, Novosibirsk Oblast, Samara Oblast, Ulyanovsk Oblast, and Moscow Oblast (the Consortium of Innovative Clusters) (Higher School of Economics (HSE), 2018).

Russia's Ministry of Economic Development is planning on working with each of the selected clusters on an individual basis, providing them with assistance in resolving issues related to the use of mechanisms of state support and interaction with companies involving government participation, development institutions, and foreign partners. Clusters which failed to gain selection will be provided consulting and organizational support, as well as assistance in tweaking and carrying into effect their development strategies.

4.2. Targets for cluster development and relevant focus areas for support for them

The Priority Project of Russia's Ministry of Economic Development implies focusing the efforts of innovation clusters on achieving global leadership in terms of investment attractiveness. Accordingly, the efficiency of their operation is, above all, determined by the volume of investment brought in from nonbudgetary sources. According to data provided in a set of agreements on support for the development of innovation clusters entered into between the Ministry of Economic Development and the supreme executive bodies of state authority within the constituent entities of the Russian Federation, in 2016 this indicator was 163.9 billion rubles. It is projected to increase by 69% by the year 2020.

In nonbudgetary investment brought in, the way is convincingly led by the Kama Innovation

Territorial/Production Cluster of the Republic of Tatarstan (worth over 109 billion rubles). Among the rest of the project participants, worthy of mention are the Consortium of Innovation Clusters of Moscow Oblast and the Innovation Cluster of Ulyanovsk Oblast, which have cleared a mark of 10 billion rubles. Despite quite close values for the volume of nonbudgetary investment in 2016 (exclusive of the Kama cluster), the nation's leading clusters differ significantly in average annual increase in the said indicator. Note that its dynamics do not depend on a cluster's current investment attractiveness. For instance, the clusters of Krasnoyarsk Krai, Samara Oblast, and Ulyanovsk Oblast are demonstrating an increase of 27–30%, while the Consortium of Innovation Clusters of Moscow Oblast is expected to exhibit negative dynamics in respect of nonbudgetary investment. Notice that among the Priority Project's 11 participants these four clusters are respectively placed 7th, 4th, 3rd, and 2nd in the volume of nonbudgetary investment attracted in 2016.

One of the key objectives in the Priority Project of Russia's Ministry of Economic Development is integrating leading clusters into global value chains. Based on this, viewed as the second major characteristic of their activity is the volume of nonresource-based exports. In 2016, this volume reached \$5,552.6 million, and is expected to increase 52% by the year 2020.

A major contribution to attaining the above volume of exports has been made by the Kama Innovation Territorial/Production Cluster of the Republic of Tatarstan – over \$5,028 million, or over 90% of total export proceeds among the leading clusters. The respective figures for other clusters vary from \$4 (the Smart Technologies Tomsk innovation territorial cluster) to \$138 million (the Petrochemical Cluster of the Republic of Bashkortostan). With most leading clusters, the expected average annual increase in exports ranges between 14 and 25%. Against this backdrop, the current focus is on the clusters of Tomsk Oblast, Novosibirsk Oblast, and Krasnoyarsk Krai, with a target value of 30%, on the one hand, and the Kama Innovation Territorial/Production Cluster of the Republic of Tatarstan, with an expected increase of around 10%, on the other hand.

In 2016, organizations that took part in leading innovation clusters generated, either from scratch or as a result of modernizing existing ones, upwards of 24,000 highly-productive jobs. The increase in the figure is projected to reach 88% by the year 2020. The way here is currently led by the Innovation Territorial Aerospace Cluster of Samara Oblast and the Kama Innovation Territorial/Production Cluster of the Republic of Tatarstan (over 4,000 and 6,000 jobs, respectively). Notably, a high annual average rate of increase in the number of highly-productive jobs created (20% and up) is anticipated not only in the clusters within Tomsk Oblast and Ulyanovsk Oblast, which are currently lagging behind in said parameter, but in the leading cluster – the Innovation Territorial Aerospace Cluster of Samara Oblast – as well. There are three clusters with the planned dynamics of 10–12%, and there are four clusters with that of no more than 5%. The only cluster that is projected to witness a decline in the rate of increase in highly-productive jobs is the Innovation Cluster of the Republic of Mordovia.

The leading clusters are oriented toward expanding the volume of research and development conducted as part of cooperation-focused interaction. In 2016, the combined value of this type of projects was estimated at about 12.2 billion rubles, and it is projected to reach 26.8 billion rubles (an increase of 120%) by the year 2020. The Consortium of Innovation Clusters of Moscow Oblast is the unquestionable leader in research and development conducted jointly by two or more organizations taking part in a cluster or conducted by one or more participating organizations in company with foreign organizations (4.6 billion rubles). The respective figures for the Sibirsky Naukopolis ["Siberian Science-Polis"] research/production cluster and the Petrochemical Cluster of the Republic of Bashkortostan are 1.2 and 2.3 billion rubles, while with the rest of the clusters the figures range between 0.2 and 0.8 billion rubles.

By 2020, the above indicator is projected to rise 15% in innovation clusters with the greatest volume of joint projects, while the maximum increase – by 50 and 62% – is anticipated with Krasnoyarsk Krai and Tomsk Oblast, respectively.

It has been suggested that highly ambitious objectives undertaken by the leading clusters

will be implemented via mechanisms of state support and interaction with companies involving government participation, development institutions, and foreign partners. The strategy for the Priority Project envisages a set of mechanisms of support for the leading clusters (Larina 2007). On the whole, there is a major focus on the more efficient use of existing measures of support in the area of innovation to help drive the priority development of the leading clusters. Another potential additional source of boosts in the efficiency of support for clusters is intercluster projects, in particular those aimed at engaging in the joint use of equipment and infrastructural facilities, joint procurement, joint promotion of products overseas, and joint cultivation of key competencies in the leading clusters' managerial teams. The third important factor for accelerating the development of clusters is the continual exchange of best practices in fostering effective interaction within a cluster, including in the area of attracting investment, developing innovation infrastructure and mechanisms of commercialization, promoting exported products, and organizing cutting-edge research and development.

5. Conclusion

The findings from this study suggest that an economic cluster is a complex, integrated, and multicomponent phenomenon in present-day regional economics which cannot be reduced to a simple set of economic entities concentrated based on the territorial/production principle. Likewise, the category of economic clusters is not a synonym for the organizational form of manifesting the state's initiative on the structural transformation of the regional economy for the purpose of developing it, despite the cluster being consistently viewed in Russia's business and management practice as the carrier of the ordering principle emanating primarily from superior administrative, or independent, coordinating establishments.

In 2016, Russia's Ministry of Economic Development moved to a new level of support for territorial clusters by launching 'The Development of Innovation Clusters – Leaders in World-Level Investment Attractiveness' Priority Project. The project is aimed at boosting the economy's competitiveness, creating advanced growth areas, facilitating innovation-driven development, increasing the export of high-tech products, facilitating the commercialization of technology, boosting labor productivity, and creating highly-productive jobs.

Clustering implies the introduction of institutional changes, which, above all, include the creation of a regulatory framework, adoption of a set of rules for intracluster relationships, and development of all elements in the tourism cluster.

The cluster establishment forms within the sociocultural space, which serves as a sort of matrix for the formation of social/economic institutions.

A cluster is a new-type institutional unit, the existence of which is predicated on synergetic principles of the nonlinear development of complex systems and is characterized by fluid and unstable processes and structural organization and an orientation mainly toward the external environment.

Thus, via clusters, by joining their efforts, representatives of the business, the government, and academic circles are searching for ways to boost their efficiency and competitiveness.

On the whole, the formation of clusters facilitates the transformation of integrated regions into networked ones and their shift to the post-industrial type of economic development. In addition, current clustering processes are facilitating the formation of new growth areas based on "second echelon" cities, which should facilitate the more even development of regions' economic space.

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Revista ESPACIOS. ISSN 0798 1015
Vol. 39 (Number 41) Year 2018

[Index]

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