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## **The Main Approaches to the Cluster Development in the Russian Economy**

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**Abstract:**

*The article deals with the analysis of the existing approaches to the cluster development in the regional economy. The author examines such notions as the cluster core, the intersectorial clusters, defines their structure, the functions of their constituents and their role in the development of the innovation system.*

*The author explores the factors determining the cluster development, moreover, he considers the sectorial clusters as the innovation growth points and discloses their significance as an institutional economic mechanism encouraging the growth of the business and innovation activity in the region and facilitating the modernization of the economy in whole. A special attention is paid to startups as the key elements of the regional innovation system.*

*The author treats the cluster as one of the fundamental tools of the economic analysis, which could disclose the innovation potential of the region, of the sector or the country in whole at the regional and macrolevels.*

**Keywords:** cluster development, regional economy, innovative economy.

**JEL Classification:** M20, O38, R10, R11

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## **Introduction**

The innovation clusters are a comparatively new tool of economic policy in the Russian economy. There are two approaches in the modern economic literature that can be easily singled out, the formation and support of special structures, which later on would perform the function of the so called “infrastructural” institutions and the maintenance of the natural development of the clusters by means of the targeted support of the institutions, which afterwards could turn into the focal cluster institutions.

For instance, the policy of the 1<sup>st</sup> kind was carried out in Italy (the project of “integrated laboratories”). The laboratories and the network, created on their basis, are to encourage the development of the industrial enterprises in the priority sectors (new materials, biotechnologies). Another example – Iceland, where cluster network were formed around the large research institutes of Reykjavik.

The policy of the 2<sup>d</sup> kind is pursued, for example, in France, where the government commission defined the 15 competitive clusters. In order to promote the development of the clusters the commission provides the financial support for the enterprises-cluster members. In Japan there is active program “Knowledge cluster initiative”. The assistance is provided for the joint projects, in which the regional universities make the cluster core represented by the network of the small innovative firms and the large industrial companies. This policy is pursued in Canada and Denmark.

## **The Rationale behind Clusters**

The institutions, constituents of the intersectorial clusters, cooperate via vertical coordination (at the level of the intersectorial labour division) and via horizontal coordination. Hence, a complicated system, combining cooperation, competitiveness and industrial specificity, is developed. The closeness and the efficiency of this coordination are in consequence the determinants of the competitiveness and of the innovation activity of the enterprises in the cluster.

**Figure 1. Cluster Policy in Russia: Stepping-up of Efforts** (source: [4])



The functioning of the cluster directly depends on the access to the scientific knowledge and latest technologies and on the ability of solid investment attraction as well. The clusters with a developed infrastructure of the intellectual and financial capital display greater development potential.

The cluster core is considered to be represented by “one or a number of the enterprises competitive in the global market, which are capable of producing the qualitative products for the needs of the majority of the companies-cluster members and for export, which hold the leading positions in the market and are capable of improving competitiveness of their products in the long-term perspective [7]. It means that the cluster core consists of the most competitive enterprises of the cluster, which are well known and, as a rule, give the name to the cluster. For example, the core of the automotive cluster in Tatarstan is its car manufacturing companies (KAMAZ, SOLLERS), although the cluster also comprises the manufacturers of the units, aggregates, components, metal constructions, composition material and others. Or another example – the footwear manufacturing

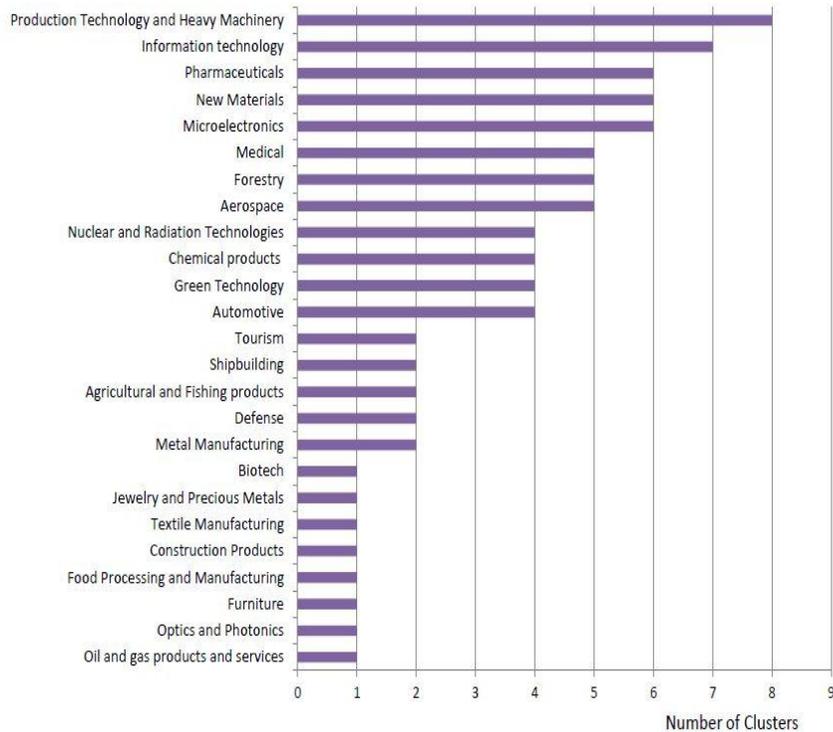
cluster in Italy. Its core is the leather shoe manufacturers, but besides them there are the manufacturers of the ski boot, of the sports shoes, of the synthetic footwear, the leather bags, gloves, the manufacturers of the boot-trees and the equipment for the footwear industry and so on.

The effectuation of the cluster development policy encourages the growth of the business and innovation activity in the region, the improvement of the investment climate, and the development of the social, economic and information systems. As a consequence, it results in the upgrowth of the entrepreneurship, the increase if the investment resources and the recovery of all the regional economic sectors.

**Figure 2.** Sectorial Orientation of Cluster Initiatives in Russia: the Majority Operate in Hi-tech Industries (source: [4])



## Sectorial Orientation of Cluster Initiatives in Russia: the Majority Operate in Hi-tech Industries



Hence, clusters in accordance with its economic function may serve as the institutional economic mechanism facilitating the initiation of the special measures on building of the unified policy and the agreement of the managerial decisions in

the sphere of effective integration of the R&D, the production, the innovation replication in the adjacent sectors, and the modernization of the economy in whole.

The sectorial clusters may turn into the innovation growth points by converting the innovation into the permanent process aimed at modernization of the existing sectors and creation of the new ones based on the application of the achievements in the fields of the nano- and biotechnology, the hydrogen economy, the quantum information science and microelectronics. The cluster is the efficient means in achieving of the competitiveness due to the informal integration of the efforts of different institutions.

The recognition of the innovation as an endogenous factor of the progressive advance of the national economy and its constituents – localized economic systems, determined the necessity to apply the measures of stimulating effect to the subjects of innovative relations on behalf of the state.

**Figure 3.** *Centres for Cluster Development (CCD): Providing the Support for Self-organization (source: [4])*



### Centres for Cluster Development (CCD): Providing the Support for Self-organization

- Established since 2010 within the framework of SME support programme by the Ministry for Economic Development of Russia
- There are CCD in 28 Russia regions
- 893 mln RUB allocated altogether (2010 – 2015) to support the CCD

	2010	2011	2012	2013	2014	2015
Subsidy volume from the Federal budget, mln RUB	94	114	120	152	164	248

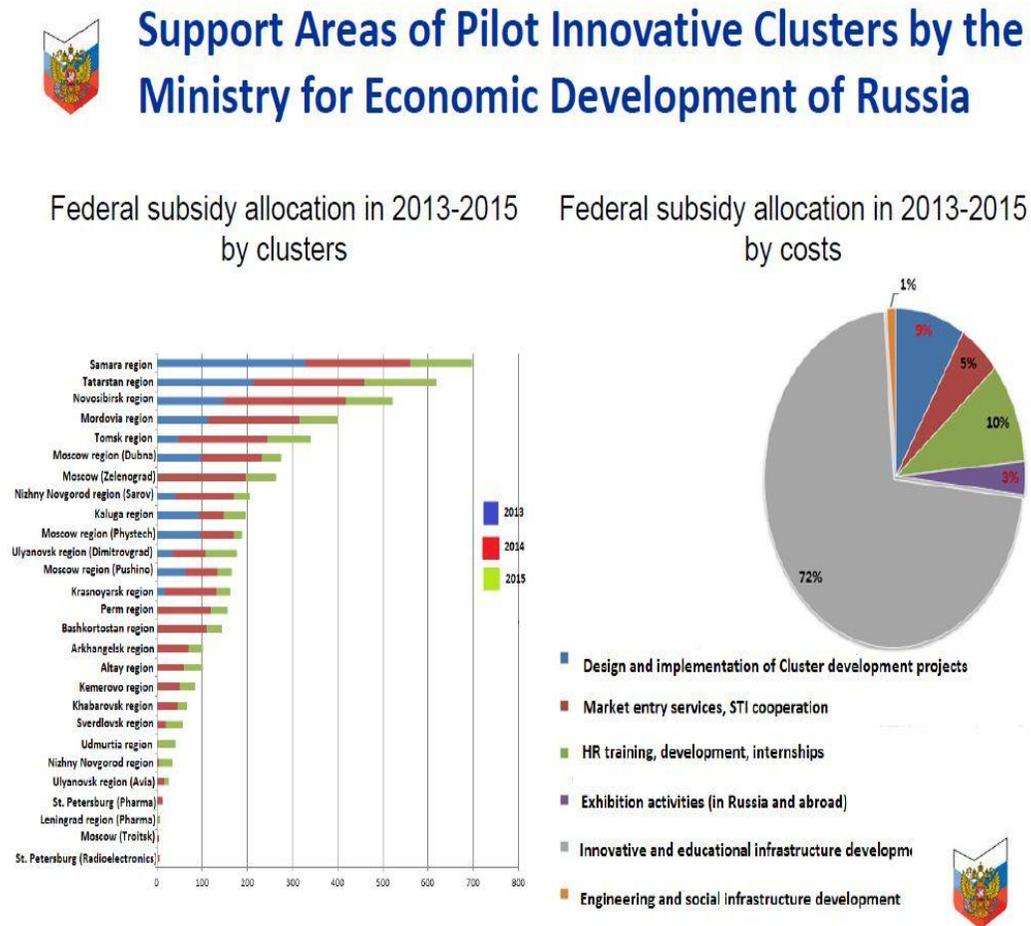
#### CCD Efficiency (data provided in 2014)

- 70 clusters are supervised by CCD (11 of them are from the pilot Innovative cluster list)
- 218 joint projects are under implementation by SME – cluster members with the assistance of CCD
- 2,5 K SMEs received services from CCD
- 19,6 mln RUB paid by SMEs for the CCD services

The evolution of the theory and practice of the innovation processes management in the regions resulted in the emergence of the alternative models characterized by the

unified target orientation, which consists in improvement of the innovation degree of the localized economic systems and in maintenance of the further growth of the economic, social and ecological usefulness via creation of the “flow” of the projects based on the use of budgetary financing, on professionalism of the management companies’ activity, on partner search and designing of the efficient institutional environment characterized by relatively high level of confidential relations.

**Figure 4.** Support Areas of Pilot Innovative Clusters by the Ministry for Economic Development of Russia (source: [4])



Furthermore, the structural models of the innovation process management system differ in their key characteristics, and this causes the negative synergetic result from their uncritical combination or the adoption of formal features, which inevitably leads to the development of the zero-cycle economy. In this respect it is expedient to single out those structural models of the innovation process management, which are based on the selection/establishment of the cluster formations and the regional

innovation systems as the object of control action. The essential features of the cluster are as follows:

- the geographical proximity of the integrated formation members, located within one single region (municipality) and characterized by the sectorial focus;
- the heterogeneity of the resident membership, represented by the large, medium and small entrepreneurial structures, their integrated formations, the R&D and educational institutions, the agencies of the state and local authority, the innovation infrastructure agents and so on;
- a definite number of residents as a condition for constituting the effect of localization and the effect the agglomeration;
- the aim of the management company consisting in the improvement of the cluster residents' competitive level;
- the run of joint project by the cluster residents as a result of realization of the cluster initiatives.

**Figure 5.** Ministry for Industry and Trade of Russia Cluster Support Programme (launching in 2016) (source: [4])



Hence, the cluster formation includes the value-creation procedure, but does not limit to it, because disposes of wider membership staff and is characterized by the sharing of costs, risks and profits in the course of realization of the joint projects. However, the cluster cannot be equaled to an association of the economic agents by the reason of its orientation toward forming of the flow of projects, while the lobbying of the residents' interests is not the main purpose of the integration, which inclines to the search of internal reserves of development.

The model of innovation processes management in the region, alternative to the cluster model, is the regional innovation system, the key elements of which are represented by the startups (technoparks, R&D centers, technology transfer centers, business incubators, centers of shared facilities etc).

**Figure 6.** Ministry for Industry and Trade Programme Potential Participants (source: [4])



Thereby, the regional innovation system is characterized by the homogeneous residential membership. The startup is represented by the entrepreneurial structures, producing the technological and institutional innovations and forming the

intellectually creative resources used consequently in the production of innovations within several regional clusters. It is typical of the startups to be located within the limits of certain territory (real estate objects), the lack of the sectorial orientation. Moreover, the efficiency of the regional innovation system does not depend on the number of its members.

The aim of the regional innovation system managing company is the initiation and development of the new forms of entrepreneurial activities in accordance with the interest of the regional education system, the educational institution, which contribute to the establishment of the small-scale innovation enterprises, other stakeholders of the regional innovation system and so on. The effective result of this model is the flow of new projects connected with formation of new entrepreneurial structures – the holders of separate business processes within the closed innovation cycle.

**Figure 7.** Current Level of Organizational Development of Industrial Clusters (source: [4])



## Current Level of Organizational Development of Industrial Clusters



42 industrial clusters have programmes / strategies / concepts of their development. 50% of these documents are approved by regional authorities.



72 industrial clusters have management bodies — CMO or Cluster Council / Steering Committee / General Meeting / Working Group etc.

There are 5 or more industrial clusters located in the regions with mature cluster policy and high industrial capacity

Region	St. Petersburg	Tula region	Moscow	Lipetsk region	Voronezh region	Tatarstan region	Tomsk region	Irkutsk region
Number of industrial clusters	12	9	6	6	6	5	5	5

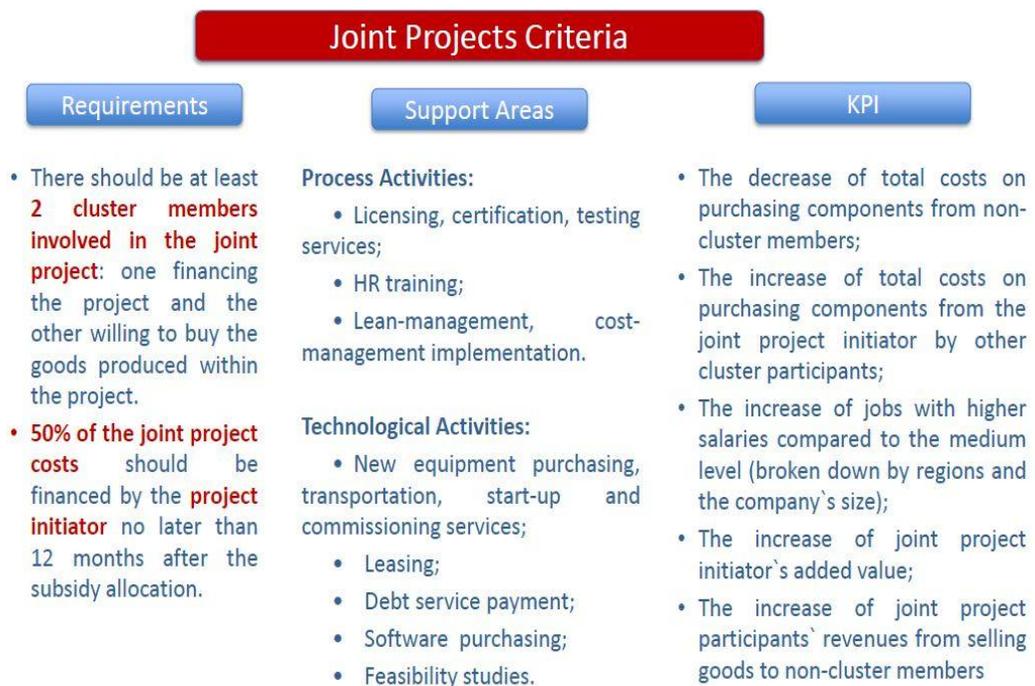
The choice of the structural model of the innovation processes management in the regional economy is determined by the combination of the endogenous and exogenous factors. The endogenous factors are the phase of the economic sector's cycle (the cycle of the economic activity), which determines the absolute and the relative merits of the region. In the phase of formation and growth the development trajectory of the sector indicators has the shape of the upward sloping curve, while the trajectory of the cluster indicators has the shape of the upward steep curve; this determines the prefer ability of the cluster model of the innovation processes management.

In the phases of maturity (stabilization) and decline the sector the realization of the regional innovation system model maintains the sustainable rise of the indicators of the sector's development by means of the innovation spread and the initiation of the developing innovations and pseudo-innovations within the innovation cycle.

**Figure 8.** Ministry for Industry and Trade of Russia: Refunding the Costs on Joint Projects to Produce Import-Substitution Goods (source: [4])



### Ministry for Industry and Trade of Russia: Refunding the Costs on Joint Projects to Produce Import-Substitution Goods



Hence, the formation of the voluntary group “Kama Innovation Regional Industrial Cluster” (INNOKAM) in the Republic of Tatarstan was conditioned by the main

specialization of the residents' activities: petrochemicals, oil refining and automotive industry, which at the moment are in the phase of recovery. The reckoning of this integrated formation among the innovation territorial clusters is justified by its eligibility and the compliance with all the necessary criteria defined in the federal program documentation. The innovation level is one of the key indicators, which shows the higher percentage of the innovation production in the cluster aggregate as compared to the corresponding average value in Russia and the average sectorial value.

Hence, the cluster contributes to the national innovation system, within which the interaction between the generator of ideas and the consumer of those ideas. The basic distinctive features of the innovation cluster are as follows: territorial limitation, close horizontal and vertical relations between the legally independent organizations of a certain sphere of activity. Moreover, the cluster may be treated as one the fundamental tools of the economic analysis, which could disclose the innovation potential of the region, of the sector or the country in whole at the regional and macrolevels.

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